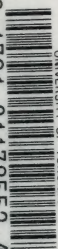


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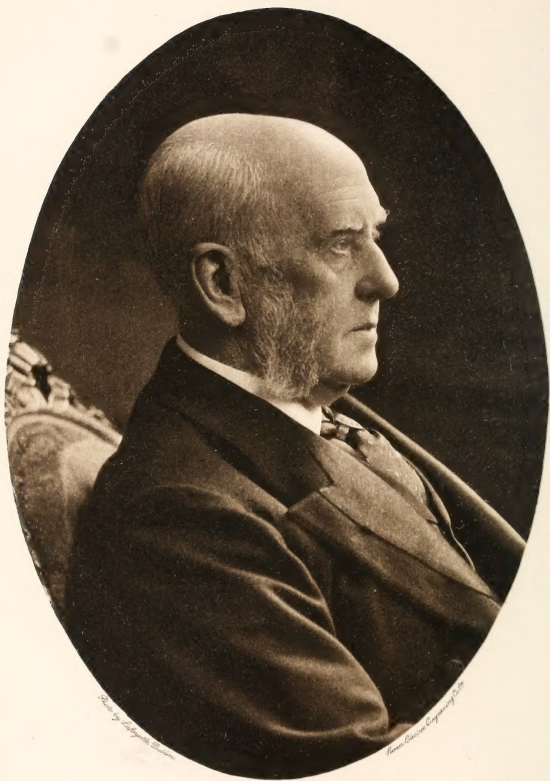






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SIR ARCHIBALD GEIKIE, K.C.B.

PRESIDENT OF THE ROYAL SOCIETY

PRES GEOL. SOC. 1890-1892, 1906-1908.

THE
CENTENARY
OF THE
GEOLOGICAL SOCIETY OF LONDON.

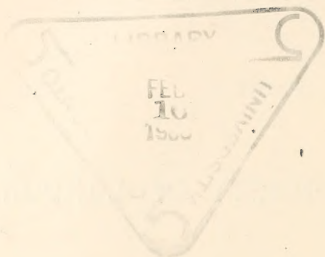
CELEBRATED
SEPTEMBER 26th TO OCTOBER 3rd,
1907.

RECORDED BY
Professor W. W. WATTS, Sc.D., M.Sc., F.R.S.,
Secretary.

LONDON:
LONGMANS, GREEN, AND CO.
PARIS: CHARLES KLINCKSIECK, 11 RUE DE LILLE.
SOLD ALSO AT THE APARTMENTS OF THE SOCIETY.

MDCCCIX.





'But if any human being desire to push on to new discoveries instead of just retaining and using the old; to win victories over Nature as a worker rather than over hostile critics as a disputant; to attain, in fact, to clear and demonstrative knowledge instead of attractive and probable theory; we invite him as a true son of Science to join our ranks, if he will, that, without lingering in the fore courts of Nature's temple, trodden already by the crowd, we may open at last for all the approach to Her inner shrine.'—BACON, '*Novum Organum*.'

Geology -
Societies

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PREFACE.

THE following record of the Centenary of the Geological Society, celebrated in 1907, has been compiled by the Senior Secretary of the Society, at the request of the Council.

In this task he has received much assistance from Sir Archibald Geikie, K.C.B., now President of the Royal Society, who has revised all the proofs and given much assistance in the selection and arrangement of material.

Mr. L. L. Belinfante has been untiring in securing accuracy and completeness, while he has also dealt with the proof-sheets in his well-known thorough and exhaustive manner.

The Secretary is much indebted to Professor W. J. Sollas and Dr. J. E. Marr for their contributions in Chapter VIII; and he has also received much help from the Directors of Excursions and Visits, particularly from Dr. Horne.

The gratitude of the Society is also due to the Editor of 'The Times,' who was good enough to supply the speech of Professor de Lapparent on p. 136 and to grant permission to use 'The Times' report of other speeches in that Chapter. Mrs. T. McKenny Hughes has been kind enough to allow the publication of the speech delivered by Professor de Lapparent in Cambridge, which he wrote out and presented to her. This speech is perhaps the last public utterance of de Lapparent, and certainly the last delivered in England (p. 162).

Unfortunately, it has not been possible to recover the text of all the speeches. This will account for some of the gaps which the Society would have naturally wished to see filled.

It is hoped that this Record of an epoch-marking event in the history of Science may form a welcome reminiscence to those kindly Friends and honoured Guests who from the four corners of the earth united to do honour to the 'Mother of Geological Societies' on her hundredth birthday, and who have left with us a fragrant memory which time will never efface.

W. W. WATTS.

Sutton, Surrey.
January 7th, 1909.

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CENTENARY

OF THE

GEOLOGICAL SOCIETY.

CHAPTER I.

PREPARATIONS.

THE Council of the Geological Society at its meeting on November 9th, 1904, took the first step towards the celebration of its Centenary by the appointment, on the motion of Mr. H. B. Woodward, of a Committee to consider the compilation of a Record of the Society. This Committee consisted originally of Mr. H. B. Woodward and Mr. H. W. Monckton, but the following names were added later:—The Officers (Dr. J. E. Marr, Mr. R. S. Herries, & Prof. W. W. Watts), The Treasurer (Dr. W. T. Blanford), and Prof. E. J. Garwood.

The task of writing the History was placed in the hands of Mr. H. B. Woodward, F.R.S., who completed it before the Celebration.

The second step was taken when the Council nominated, and the Society at its annual meeting in 1906 elected, Sir Archibald Geikie as President for the session 1906–1907. This election was made in view of the fact that in 1907 the Society would complete the first century of its existence, and would be celebrating that event during the year. This was Sir Archibald's second term of office, he having been President during the Sessions 1890–1892. He was in due course re-elected for the Centenary Session in 1907, and it was a source of much gratification to the Society that His Majesty

the King was pleased to confer upon him the honour of a Knight-Commandership of the Order of the Bath in that year.

Many of the preliminary arrangements for the Centenary were discussed by the 'Record Committee' during its meetings between the date of its appointment and the early part of 1907, when the Council resolved to hold the Celebration at the end of September, to recommend the expenditure of £150 on preparations for it, and to constitute a larger Committee, including the Record Committee, to draw up a programme, and carry the arrangements forward. This Committee consisted of the Officers (Sir Archibald Geikie, Prof. W. W. Watts, and Prof. E. J. Garwood), the Foreign Secretary (Sir John Evans), the Treasurer (Mr. H. W. Monckton), Dr. J. E. Marr, Prof. H. A. Miers, Mr. F. W. Rudler, Dr. J. J. H. Teall, Dr. A. S. Woodward, and Mr. H. B. Woodward. The Committee was instructed, among its other duties, to draw up a list of Institutions and Individuals, at home and abroad, and to issue invitations to them to attend the Celebration.

This Committee at once occupied itself with preparations for the celebration of the Centenary. The date was fixed for September 26th, 27th, and 28th, these days being thought more convenient to the majority of Colonial and Foreign Guests than the actual anniversary of the first meeting of the Society which, as a matter of fact, took place in the month of November.

It was resolved to invite the presence of a large number of Foreign Geologists and other Scientific Men, and to extend the invitations to Learned Institutions throughout the world. The Foreign Members and Foreign Correspondents of the Society naturally came first, and then those who had received medals or other awards from the Society. The chief British, Colonial, and Foreign Academies, Geological Surveys, and Scientific Societies, and all the chief Universities, Colleges, and Schools which undertake the teaching of Geology, Mineralogy, or Palaeontology, were invited to send Delegates, an invitation to which there was a cordial response.

In addition to these, a large number of individual Geologists of eminence in Foreign countries and throughout the British Empire were invited, and a provisional programme of the Celebration was drawn up and sent to them. More than 900 invitations in all were sent out.

The list given below comprises all those Institutions and Persons who accepted the invitation and sent Representatives or Addresses of congratulation. But those whose names are printed in *italics* were unfortunately prevented from being present.

LIST OF FOREIGN, COLONIAL, AND BRITISH DELEGATES
AND INVITED GUESTS.

Foreign Members of the Geological Society.

* Foreign Correspondents of the Geological Society.

† Fellows of the Geological Society.

Foreign Countries.

Austria-Hungary.

University of Cracow	Prof. V. Szajnoch.
University of Graz	
Imperial Royal Bohemian University, Prague	Prof. F. Pošta.
Imperial Royal Geological Survey	Dr. E. E. A. Tietze.*
Hungarian Geological Society, Budapest	M. Bela de Inkey.

Argentine Confederation.

University of Buenos Ayres	Prof. Don Eduardo Aguirre.
Museum of La Plata	Dr. A. Smith Woodward.†

Belgium.

Catholic University of Louvain	Prof. H. de Dorlodot.
" " "	<i>Prof. Kaisin.</i>
Royal Academy of Sciences, Brussels	M. Michel F. Mourlon.*
Geological Survey of Belgium	M. Michel F. Mourlon.*
Royal Museum of Natural History, Brussels.....	Prof. Louis Dollo.**
Belgian Society of Geology, Brussels	Prof. Louis Dollo.**
Geological Society of Belgium, Liège	<i>M. Maximin Lohest.</i>
" " "	<i>M. A. Stainier.</i>
" " "	M. P. Fournarier.

Denmark.

Royal Danish Academy of Sciences, Copenhagen ...	Prof. N. V. Ussing.
Geological and Geographical Survey of Greenland .	Dr. K. J. V. Steenstrup.
Geological Society of Denmark	Dr. K. J. V. Steenstrup.
Dr. Th. Thoroddsen,* Copenhagen.	

Egypt.

Geological Survey of Egypt	Captain H. G. Lyons.†
" "	Dr. W. F. Hume.†

France.

University of Paris	<i>Prof. Léon Bertrand.</i>
" "	<i>Prof. Emile Haug.</i>
" "	<i>Prof. Charles Vélain.</i>
University of Bordeaux	<i>Prof. E. Fallot.</i>
University of Caen	<i>Prof. A. Bigot.</i>
University of Lille	<i>Prof. Charles Barrois.**</i>
University of Lyons	<i>Prof. C. Depéret.</i>
Academy of Sciences, Paris	<i>Prof. Charles Barrois.**</i>
National School of Mines, Paris	<i>Prof. L. de Lawmay.</i>
" " " "	<i>Prof. P. Termier.</i>
Geological Society of France	<i>Prof. Charles Barrois.**</i>
" " " "	<i>Prof. Marcellin Boule.*</i>
" " " "	<i>Dr. Léon Carez.</i>
" " " "	<i>Prof. Jules Gosselet.**</i>
" " " "	<i>Prof. A. de Lapparent.**</i>
" " " "	<i>Dr. Paul Lemoine.</i>
" " " "	<i>Prof. P. Termier.</i>
" " " "	<i>Dr. A. Thevenin.</i>
Geological Society of the Nord	<i>Prof. Charles Barrois.**</i>
" " " "	<i>Prof. Jules Gosselet.**</i>
Linnean Society of Normandy	<i>M. Antoine.</i>
" " " "	<i>Prof. A. Bigot.</i>
M. Gustave F. Dollfus,** Paris.	
Prof. A. Lacroix,**	
M. Emmanuel de Margerie,*	

German Empire.

Royal University of Bonn (Rheinische-Friedrich Wilhelms Universität)	<i>Prof. Gustav Steinmann.</i>
" " Breslau	<i>Prof. Fritz Frech.</i>
" " Göttingen	<i>Prof. A. von Koenen.*</i>
" " Greifswald	<i>Prof. Otto Jäkel.</i>
" " Halle	<i>Prof. Johannes Walther.*</i>
" " Heidelberg	<i>Prof. Bütschli.</i>
" " Leipzig	<i>Prof. Hermann Credner.**</i>
" " " "	<i>Prof. F. Zirkel.**</i>
" " Tübingen.....	<i>Prof. E. Koken.*</i>
Royal Prussian Academy of Sciences	
Royal Bavarian Academy of Sciences, Munich	<i>Prof. A. Rothpletz.**</i>
Royal Society of Sciences, Göttingen	<i>Prof. A. von Koenen.*</i>
Imperial Leopoldine-Caroline Academy, Halle	<i>Prof. Johannes Walther.*</i>
German Geological Society	<i>Prof. Gustav Steinmann.</i>
Royal Academy of Mines, Freiberg	<i>Prof. R. Beck.</i>
Royal Academy of Mines, Clausthal	<i>Prof. A. Bergeat.</i>
Geological Survey of Saxony.....	<i>Prof. Hermann Credner.**</i>
Prof. H. Conwentz, Danzig.	
Prof. C. Gottsche, Hamburg.	
Prof. E. Kayser,** Marburg.	
Prof. A. Penck,** Berlin.	
<i>Prof. H. Rosenbusch,**</i> Heidelberg.	
Prof. Erich D. von Drygalski,* Munich.	

Greece.

National University of Greece, Athens	<i>Prof. Theodoros G. Skouphos.</i>
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Holland.

University of Utrecht	<i>Prof. A. Wichmann.</i>
University of Groningen	<i>Prof. F. J. P. van Calker.</i>
University of Amsterdam	<i>Prof. E. Dubois.</i>
Academy of Sciences, Amsterdam	<i>Prof. G. A. F. Molengraaff.</i>
Geological Survey of the Netherlands	<i>Dr. W. A. J. M. van Waterschoot van der Gracht.†</i>

Italy.

Ministry of Public Instruction	<i>Prof. Giuseppe de Lorenzo.</i>
University of Pisa	Sir Archibald Geikie.†
Royal Academy of Sciences, Turin	Sir Archibald Geikie.†
Geological Society of Italy	Prof. T. McKenny Hughes.†
Royal Geological Commission of Italy	Sir Archibald Geikie.†

Japan.

Science College of the Imperial University, Tokyo .	Prof. F. Omori.
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Mexico.

Geological Survey of Mexico	Dr. José G. Aguilera, Director.
'Antonio Alzate' Scientific Society	Dr. José G. Aguilera.

Norway.

Royal University of Norway	Prof. W. C. Brögger.**
Geological Survey of Norway	Dr. Hans Reusch.**
Museum of Bergen	Dr. Carl F. Kolderup.
Agricultural College, Aas	Dr. K. O. Björlykke.

Portugal.

Geological Survey of Portugal	<i>Prof. Wenceslau de Lima.</i>
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Russian Empire.

Imperial University of St. Petersburg	<i>Prof. A. A. Inostranzew.</i>
Imperial University of Moscow	Prof. A. P. Pavlow.*
Imperial University of Dorpat	
Imperial Academy of Sciences, St. Petersburg	Dr. Th. Tschernyschew.
Polytechnic Institute of St. Petersburg	Prof. Dr. F. Lœwinson-Lessing.*
Imperial Mineralogical Society of St. Petersburg ..	
Imperial Society of Naturalists of Moscow	Prof. A. P. Pavlow.*
Geological Survey of Russia	Dr. Th. Tschernyschew.

Finland.

Geological Survey of Finland	Dr. J. J. Sederholm.*
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Sweden.

Royal University of Upsala	Prof. Hjalmar Sjögren.
Royal University of Lund	Prof. J. C. Moberg.
Royal Swedish Academy of Sciences	Prof. A. G. Nathorst.**
State Museum of Natural History, Stockholm	Prof. A. G. Nathorst.**
Geological Survey of Sweden	Prof. J. Gunnar Andersson.
Geological Society of Stockholm	Prof. Hjalmar Sjögren.

Prof. Svante Arrhenius, Stockholm.

Dr. Gunnar Andersson, Djursholm, Stockholm.

Dr. Hjalmar Lundbohm, Kiruna.

Switzerland.

University and Polytechnicum of Zürich	Prof. Albert Heim.**
University of Geneva	<i>Prof. C. Sarasin.</i>
Geological Commission of Switzerland }	{ Prof. Albert Heim.**
Swiss Geological Society	
	{ Prof. Armin Baltzer.
B. Peyer, Schaffhausen.	

United States of America.

Harvard University, Cambridge, Mass.	Prof. W. M. Davis.*
Yale University	
Johns Hopkins University, Baltimore	Prof. W. Bullock Clark.*
Chicago University	Prof. J. P. Iddings.**
"	Prof. S. W. Williston.*
"	Prof. R. S. Tarr.
Cornell University, Ithaca, N.Y.	
University of the State of New York	
University of Wisconsin, Madison, Wis.	Prof. C. K. Leith.
National Academy of Sciences, Washington	Dr. Arnold Hague.†
Academy of Natural Sciences, Philadelphia	Sir Archibald Geikie.†
American Academy of Arts and Sciences, Boston...	Prof. W. M. Davis.*
Boston Society of Natural History	Prof. W. M. Davis.*
California Academy of Sciences, San Francisco ...	Dr. Marsden Manson.
Geological Society of America	Prof. J. J. Stevenson, New York.
"	Prof. W. M. Davis,* Harvard.
Geological Society of Washington	Dr. Whitman Cross.
American Association for the Advancement of Science	Prof. J. P. Iddings.
" " "	Prof. J. M. Clarke.*
" " "	Prof. R. S. Tarr.
The Smithsonian Institution	Dr. Arnold Hague.†
Geological Survey of the United States	Dr. Arnold Hague.†
United States National Museum, Washington	Dr. Arnold Hague.†
State Museum of New York, Albany	Prof. J. M. Clarke.*
Geological Survey of Wisconsin	Prof. C. K. Leith.
American Institute of Mining Engineers	James D. Hague.
Bureau of Geology and Mines, Missouri.....	
Harvard Geological Congress	
G. F. Becker, U.S. Geological Survey.	
Dr. G. R. Wieland, Carnegie Institution of Washington and Yale University.	
Dr. Bailey Willis, U.S. Geological Survey.	
Prof. H. F. Reid, Baltimore.	
R. H. Chapman, U.S. Geological Survey.	

British Colonies and Dependencies.

Dominion of Canada.

McGill University, Montreal	Prof. F. D. Adams.†
Royal Society of Canada ... }	{ Dr. H. M. Ami.†
Geological Survey of Canada }	
Peter McKellar,† Fort William, Ontario.	Prof. F. D. Adams.†

India.

Geological Survey of India	T. H. D. La Touche.†
Mining & Geological Institute of India, Calcutta...	H. G. Graves.
Asiatic Society of Bengal	E. D. Oldham.†

South Africa.

Geological Survey of Cape Colony	Dr. A. W. Rogers.†
Geological Society of South Africa	Dr. F. H. Hatch.†
Rhodesia Museum, Bulawayo	P. B. S. Wrey.
South African Museum	Dr. A. W. Rogers.†

Commonwealth of Australia.

University of Sydney	Prof. J. P. Hill.
University of Melbourne	Prof. J. W. Gregory.†
National Museum, Melbourne	Dr. A. S. Woodward.†
Geological Survey of Western Australia	Hon. C. H. Rason, Agent-General for Western Australia.
Royal Society of Tasmania	R. M. Johnston, Registrar General.
Geological Society of Tasmania	R. M. Johnston, " "

Dominion of New Zealand.

Canterbury College, Christchurch H. G. Denham.
Geological Survey of New Zealand.

Great Britain and Ireland.

University of Oxford	Prof. W. J. Sollas.†
" Cambridge	Prof. T. McK. Hughes.†
" St. Andrews	Dr. T. J. Jehu.†
" Glasgow	Prof. J. W. Gregory.†
" Dublin	Prof. J. Joly.†
" Edinburgh	Prof. James Geikie.†
" London	Prof. H. G. Seeley.†
" Durham	Prof. G. A. Lebour.†
" (Victoria) Manchester	Prof. W. Boyd Dawkins.†
" Birmingham	Prof. Charles Lapworth.†
" Liverpool	Prof. R. J. Harvey Gibson.†
" Leeds	Prof. P. F. Kendall.†
" Sheffield	Prof. A. McWilliam.
University College, London	Prof. E. J. Garwood.†
King's College, London	Prof. H. G. Seeley.†
Armstrong College of Science, Newcastle-on-Tyne ..	Prof. G. A. Lebour.†
University College, Bristol	Prof. S. H. Reynolds.†
" " Aberystwyth	Dr. R. D. Roberts.†
" " Cardiff	Prof. W. S. Boulton.†
Queen's College, Belfast	Miss Mary K. Andrews.
Royal College of Physicians	Dr. M. C. Grabham.
Royal College of Surgeons of England	Henry Morris.
Royal College of Science and Royal School of Mines	Prof. J. W. Judd.†
" " " "	Prof. S. H. Cox.†
" " " "	Prof. W. W. Watts.†
Royal College of Science for Ireland	Prof. G. A. J. Cole.†
Royal Agricultural College, Cirencester	Prof. G. C. Gough.†
Bedford College, London	Miss C. A. Raisin.
Royal Albert Memorial College, Exeter	Principal A. W. Clayden.†
British Museum (Natural History)	Dr. A. S. Woodward.†
Royal Scottish Museum, Edinburgh	Dr. R. H. Traquair.†
Geological Survey of Great Britain & Museum of	Dr. J. J. H. Teall.†
Practical Geology, Jermyn Street	Dr. J. Horne.†
Geological Survey of Ireland	Prof. G. A. J. Cole.†
Royal Society	A. B. Kempe.
Society of Antiquaries	Lord Avebury.†
Royal Society of Edinburgh	Prof. James Geikie.†
Royal Irish Academy	Prof. G. A. J. Cole.†
Linnean Society	Dr. B. Daydon Jackson.
Royal Physical Society of Edinburgh	Dr. J. Horne.†
Royal Dublin Society	Prof. J. Joly.†
Zoological Society	Dr. Henry Woodward.†
Chemical Society	Dr. Horace T. Brown.†
Royal Institution	Prof. H. E. Armstrong.
Royal Astronomical Society	H. F. Newall.
Cambridge Philosophical Society	A. Harker.†
Ray Society	Lord Avebury.†
" " " "	John Hopkinson.†
Ashmolean Natural History Society, Oxford.....	Prof. W. J. Sollas.†
Royal Philosophical Society of Glasgow	Dr. James Knight.†
Royal Geographical Society	Major C. F. Close.
Royal Scottish Geographical Society	Prof. James Geikie.†
Mineralogical Society	Prof. H. A. Miers.†
Royal Microscopical Society	Lord Avebury.†
Sociological Society	Lord Avebury.†

Geologists' Association	R. S. Herries.†
Royal Anthropological Institute	Prof. W. Boyd Dawkins.†
Royal Meteorological Society	Dr. H. R. Mill.
Institution of Civil Engineers	Sir Alexander B. W. Kennedy.
Iron " and Steel " Institute "	Sir Alexander Binnie.†
Surveyors' Institution	Prof. A. McWilliam.
Institution of Mining and Metallurgy	T. M. Rickman.
Institution of Mining Engineers	C. J. Alford.†
North of England Institute of Mining & Mechanical Engineers	G. Elmsley Coke.†
Geological Society of Edinburgh	Prof. G. A. Lebour.†
Geological Society of Glasgow	James Currie.
Yorkshire Geological Society	W. G. Black.
Yorkshire Philosophical Society	Dr. B. N. Peach.†
Manchester Geological and Mining Society	Rev. C. T. Pratt.
Liverpool Geological Society	Dr. Tempest Anderson.
Liverpool Geological Association	Prof. W. Boyd Dawkins.†
Leeds Geological Association	Joseph Lomas.†
Hull Geological Society	Dr. W. H. Quilliam Bey.
Newcastle Literary and Philosophical Society	Dr. A. R. Derryhouse.†
Leicester Literary and Philosophical Society	W. H. Crofts.
North Staffordshire Naturalists' Field Club	Prof. M. C. Potter.
Bristol Naturalists' Field Club	Dr. F. W. Bennett.
Dublin Naturalists' Field Club	Dr. Wheelton Hind.†
Belfast Naturalists' Field Club	Prof. S. H. Reynolds.†
	J. de W. Hinch.
	W. T. C. Tomlinson.

Prof. F. O. Bower, University of Glasgow.

A. W. Brögger, Christiania.

Prof. W. J. Lewis, Trinity College, Cambridge.

Prof. F. W. Oliver, University College, London.

Mrs. Adams, Montreal.

Miss Kitty Andrews, Belfast.

Miss Dorothea M. A. Bate, Wyseley, Ecclefechan, Dumfries.

Miss M. Benson, Royal Holloway College.

Frau Professor Bergeat, Clauthal.

Mrs. Clark, Baltimore, Md.

Mrs. Clarke, Albany, N.Y.

Mrs. Bowen-Colthurst, Dripsey Castle, Co. Cork.

Miss Bowen-Colthurst, Dripsey Castle, Co. Cork.

Miss Margaret C. Crosfield, Reigate.

Mrs. Whitman Cross, Washington, D.C.

Mme. Dollfus, Paris.

Miss Helen Drew, Newnham College, Cambridge.

Miss G. L. Elles, Newnham College, Cambridge.

Miss E. Goodyear, Geological Museum, University College, London.

Mrs. M. M. Ogilvie Gordon, Aberdeen.

Miss Grabham, Madeira.

Mrs. Hague, Washington, D.C.

Miss Maud Healey, University Museum, Oxford.

Fräulein Kayser, Marburg.

Mme. Lacroix, Paris.

Mme. Paul Lemoine.

Fröken Nathorst, Stockholm.

Fräulein Penck, Berlin.

Mrs. Shakespear, Northfield, near Birmingham.

Miss Ethel G. Skeat, Queen's School, Chester.

Mme. Skouphos, Athens.

Miss Ida L. Slater, London.

Miss Hertha Sollas, Oxford.

Miss Igerna B. J. Sollas, Oxford.

Mme. Thoroddsen, Copenhagen.

Frau Professor Walther, Halle a. d. Saale.

Mrs. A. Crawford Williamson, Longfield, Kent.

The list of those who actually attended may be summarised as follows:—

Foreign Members	18
Foreign Correspondents	15
Delegates, Foreign (not including Foreign Members & Correspondents) .. }	44
„ Colonial	13
„ British	65
Other Foreign Geologists	7
British and Colonial Geologists } (not Fellows of the Society) }	4
Fellows of the Society (not delegates)	111
Ladies	30

Thus the total number of those attending the Centenary amounted to not less than 307.

It was soon found that the sum voted by the Society at the Annual Meeting would not suffice to cover more than a part of the expenses; a subscription was therefore opened among the Fellows to provide an entertainment fund. A liberal response was met with, and the sum of £402 was subscribed by 196 Fellows, while a generous donation was also received from the Institution of Mining Engineers. These subscriptions made it easy for the Committee to draw up a more satisfactory programme than would otherwise have been possible.

It was arranged that the Celebration should be opened by a formal reception of Visitors on Thursday, September 26th, to be followed later in the day by a second meeting at which an Address would be delivered by the President. The Committee further decided that two entertainments should be provided by the Society for the Visitors—a Dinner at the Whitehall Rooms on September 26th, and a *Conversazione* at the British Museum—Natural History on the following evening. The Society would entertain on these occasions all Delegates and Visitors who were not actually Fellows of the Society. Arrangements for these entertainments were placed in the hands of Prof. Garwood and Mr. Monckton.

It was further agreed that a Sub-Committee, consisting of Mr. Monckton, Mr. Rudler, and Prof. Watts, should arrange a series of long and short excursions for Delegates and for Foreign and Colonial Visitors, before the meeting; and shorter excursions, visits to places of interest, etc., for all those attending the Celebration, to be held during the meeting itself.

The adaptation of the Apartments of the Society for the reception of Visitors was placed in the hands of Mr. Rudler and Mr. H. B. Woodward, who completed their work before September 16th, so that the Apartments were open for Visitors on that day. The rooms were found to be very comfortable, and quite suitable for the purpose.

The Library was thrown open, the Museum converted into a conversation, writing, and smoking room, the Council Room made into a ladies' drawing-room, and the Meeting Room was used as a cloak-room and dressing-room. In the conversation-room and elsewhere in the house various maps, sections, and specimens of historic interest, chosen from the Library and Museum, were set out and labelled by Mr. Rudler. A few personal belongings of the First President, Greenough, were also kindly exhibited by one of his relatives, Mrs. Bowen-Colthurst, and some drawings and other objects of historic interest were generously lent by Mrs. Gordon (*née* Buckland).

A Roll of signatures was opened in the Secretary's Office, and all who attended the Celebration were requested to sign it. This Roll, together with numerous souvenirs of the occasion, is treasured among the archives of the Society.

Dr. J. E. Marr announced that members of the University of Cambridge proposed to entertain about half of the Foreign and Colonial Guests at Cambridge on September 30th and the following days; and Prof. Miers made a similar announcement with regard to Oxford. These proposals were gratefully accepted, and arrangements were left in the hands of the gentlemen named. Later it was announced that each University intended to confer honorary degrees on six of the twelve Foreign Members of the Society who had up to that date signified their intention to be present.

The Committee of the Geological Society Club kindly offered to entertain the Foreign and Colonial Delegates at dinner on Friday, September 27th, an offer which was also gratefully accepted.

When the Programme had been thus far sketched out, a larger Reception Committee, including the whole of the Council, the past Presidents of the Society, and other Fellows, was appointed, and the preliminary arrangements were submitted for their sanction. The Reception Committee consisted of the following Fellows:—

RECEPTION COMMITTEE.

SIR ARCHIBALD GEIKIE, K.C.B., Sc.D., D.C.L., LL.D., Sec.R.S., *President*.

Dr. J. E. MARR.	} <i>Vice-Presidents.</i>
Prof. W. J. SOLLAS.	
Dr. A. STRAHAN.	
Dr. J. J. H. TEALL.	

ARNOLD-BEMROSE, H. H.
 AVEBURY, The Rt. Hon. Lord.
 BAUERMAN, H.
 BONNEY, Prof. T. G.
 BROWN, Dr. H. T.
 CARRUTHERS, W.
 COX, Prof. S. H.
 DAWKINS, Prof. W. BOYD.
 FISHER, Rev. O.
 FLETCHER, L.
 GEIKIE, Prof. JAMES.
 GREGORY, Prof. J. W.
 HARKER, ALFRED.
 HAEMER, F. W.
 HERBIES, R. S.
 HILL, WILLIAM.
 HINDE, Dr. G. J.
 HORNE, Dr. J.
 HUDLESTON, W. H.
 HUGHES, Prof. T. McKENNY.
 HULL, Prof. E.
 JUDD, Prof. J. W.
 KITCHIN, Dr. F. L.

LAMPLUGH, G. W.
 LAPWORTH, Prof. CHARLES.
 LYDEKKER, R.
 MIERS, Prof. H. A.
 MILNE, Dr. J.
 MITCHINSON, Right Rev. JOHN.
 NEWTON, E. T.
 PRICE, F. G. HILTON.
 REID, CLEMENT.
 RUDLER, F. W.
 SCOTT, Dr. D. H.
 SEELEY, Prof. H. G.
 SEWARD, Prof. A. C.
 SORBY, Dr. H. C.
 SPENCER, L. J.
 STRANGWAYS, C. FOX.
 TIDDEMAN, R. H.
 WHITAKER, W.
 WINWOOD, Rev. H. H.
 WOODS, HENRY.
 WOODWARD, Dr. A. SMITH.
 WOODWARD, Dr. HENRY.
 WOODWARD, H. B.

Treasurer.—H. W. MONCKTON.

Foreign Secretary.—SIR JOHN EVANS, K.C.B.

Prof. E. J. GARWOOD.	} <i>Secretaries.</i>
Prof. W. W. WATTS.	

Mr. H. B. Woodward had meanwhile made great progress with the Record of the Society, and was able to publish it early in September under the title of 'The History of the Geological Society of London.' This work contains many important facts in the history of the Society, some of them but little known; and others, mainly derived from the early minute-books of the Society and of the Geological Society Club, hitherto unpublished. The book is illustrated with figures of the Society's medals, and with portraits of several of the former Presidents, some of them copied from originals in the possession of the Society, others kindly lent by their possessors or publishers. The selection and preparation of the illustrations were entrusted to one of the Secretaries, Prof. Garwood, who himself presented a beautiful coloured print taken from the portrait of Buckland which hangs in the Council Room of the Society. Mr. R. S. Herries undertook to collate and supervise the reprint of the Charter, and Mr. Monckton to look over certain legal documents in the Library of the Society. Mr. P. Simpson kindly provided a new and accurate translation of the Society's Baconian motto (*ante*, p. ii).

CHAPTER II.

PRELIMINARY EXCURSIONS.

THE Celebration of the Centenary may be said to have begun on Monday, September 16th, when the Roll was opened and Visitors who were joining the Preliminary Excursions began to arrive at the Apartments of the Society.

The projected Excursions included six occupying a week each, and four timed for three or four days each. Of the former, three were abandoned as the proposed attendance was not sufficient, namely, that to Shropshire arranged by Professors Lapworth and Watts; to the Isle of Wight by Mr. Whitaker, Mr. Colenutt, and Mr. Hooley; and that to the Edinburgh District by Dr. Peach, Mr. Clough, Mr. Cadell, and Mr. Steuart. For the last an Excursion to the North-West Highlands was substituted, under Dr. Horne and Dr. Peach. An entertainment proposed by Sir Benjamin Stone and the Vesey Club at Sutton Coldfield, and by members of the University of Birmingham, had to be declined for the same reason. Of the shorter excursions, that to Charnwood Forest directed by Prof. Watts was also not carried out.

A 1. The Excursion to the English Lake District was led by Dr. J. E. Marr and Prof. E. J. Garwood. A programme illustrated with a map and photographs, a copy of which is deposited in the Library of the Society, was drawn up and printed by the Directors. The party visited Coniston, Windermere, Keswick, Penrith, and Appleby, studying the Lower Palæozoic rocks of 'Lakeland' and the Carboniferous rocks of the Pennines and adjoining tracts. They also visited the granites of Skiddaw and Shap. Considerable attention was paid to the physical geography of the area. In addition to the Directors the party included Prof. & Mrs. F. D. Adams and Dr. Ami (Canada), Prof. & Mme. Bergeat (Germany), Dr. Whitman Cross and Prof. W. M. Davis (U.S.A.), Dr. F. H. Hatch (S. Africa), Prof. Pořta (Bohemia), Prof. Reusch (Norway), and Prof. R. S. Tarr (U.S.A.).

A 2. This Excursion covered a good deal of ground, beginning in South Wales and finishing in the West of England. The first part was directed by Dr. A. Strahan, Mr. R. H. Tiddemann, Mr. T. C. Cantrill, Mr. H. H. Thomas, and Mr. E. E. L. Dixon. The first day was devoted to the long section from Ordovician to Carboniferous Rocks near Llandilo; the second to the Carboniferous Rocks and Raised Beaches of the Mumbles; and the third to the Rhætic Beds of Penarth. At Bristol, the direction passed into the hands of Prof. S. H. Reynolds, Dr. A. Vaughan, and Prof. W. S. Boulton. The fourth day was spent at Clevedon and Portishead; the fifth at Aust Cliff and on the Carboniferous section of the Avon Gorge; the sixth in Burrington Combe and at the Cheddar Cliffs; and the last on the volcanic rocks associated with the Carboniferous Limestone near Weston-super-Mare.

The following attended this Excursion:—Prof. Gunnar Andersson (Sweden), Prof. Barrois (France), M. Bela de Inkey (Hungary), M. Fourmarier (Belgium), and Herr Peyer (Switzerland).

A 3. The Excursion to Lyme Regis, Weymouth, and the Isle of Purbeck, started at Lyme Regis under the direction of Mr. H. B. Woodward and worked eastwards. The first day was spent on and near the great Landslip; the second at Pinhay Bay, Black Ven, and Charmouth; the third at Golden Cap, Bridport Harbour, Burton Bradstock, and Abbotsbury; and the fourth between Weymouth and Portland. Dr. A. Strahan now joined the party as co-director, and the fifth day was spent in the district between Ossington Mill, Mupe Bay, and Lulworth; the sixth at Worbarrow Bay and St. Albans Head; and the last morning at Durlston Head and Ballard Down.

The following Foreign Guests were present during part or the whole of this Excursion:—Prof. & Mlle. Welsch (France), and Dr. Wieland and Prof. Williston (U.S.A.).

A 5. At the last moment, and at the urgent and unanimous request of those Visitors who had given in their names as joining the Edinburgh Excursion, it was agreed that this party should proceed to the North-West Highlands of Scotland instead.

The Assynt District in Sutherlandshire was selected, with the special object of seeing typical sections of those powerful thrusts which produced great displacements of the strata in post-Cambrian time. Part of the undisturbed area between Inchnadamff and Lochinver was first traversed, where the members of the party

examined the Lewisian Gneiss with its intrusive dykes, the Torridon Sandstone and the Cambrian Quartzites, followed by the *Olenellus*-Zone. Thereafter the sections on the north and south sides of Loch Glencoul were visited, showing characteristic examples of imbricate structure (*Schuppen-struktur*) and the bare outcrop of the Glencoul Thrust, which brings westward a great mass of Lewisian Gneiss overlain unconformably by Cambrian strata. Attention was next directed to the outcrop of the Moine Thrust,—the easternmost of the great displacements,—at Knockan, where the Eastern Schists overlap all intermediate thrusts and rest directly upon undisturbed Cambrian strata. The members of the party, to their great satisfaction, walked for a quarter of a mile on the bare plane of this thrust, exposed in a small stream east of the Knockan Cliff. Finally, they visited exposures of borolanite and the associated intrusive igneous rocks in the southern part of Assynt. Fortunately the weather was favourable, and the sections were seen to advantage.

The following were present:—Prof. & Fräulein Kayser and Prof. & Frau Walther (Germany), Dr. Kitson (Australia), Prof. Pavlov and Dr. Tschernyschew (Russia), and Dr. Sederholm (Finland).

The *shorter Excursions* began on Monday, September 23rd, or the following day.

B 1. The Forest of Dean and May Hill, under the direction of Dr. C. Gilbert Cullis and Mr. L. Richardson. The Garden Cliff section at Westbury was studied on Monday, and on that evening the tidal bore of the Severn was observed from the alluvial flat of the river. The following day the bore was observed from the cliff above the river, and then the basin of the Forest of Dean was crossed from Newnham to Monmouth. The last day was devoted to the section of May Hill, from Longhope and Huntly to Newent. Prof. Beck and Prof. Credner (Germany) were present.

B 2. The Derbyshire Excursion, under Mr. H. Arnold-Bemrose, was confined to two days. The first was spent on the Carboniferous volcanic rocks in Miller's Dale and Tideswell Dale; and the second, on the volcanic vents and on the drifts associated with the Carboniferous Limestone about Matlock Bath. The visitors present at the Excursion were Prof. Bigot (France), Miss Andrews and Miss K. Andrews (Ireland).

B 3. The last of the short Excursions was to the Crag District, under the direction of Mr. F. W. Harmer and Mr. E. P. Ridley. On Monday, September 23rd, a visit was arranged to the Ipswich Museum and to a section of Contorted Drift near Ipswich. The second day was devoted to Glacial deposits near Woodbridge, the Red and Chillesford Crag, and to the Coralline Crag of Orford and Sudbourne. The last day was spent on the Red Crag of Walton-on-the-Naze. The following attended this excursion:—Prof. Boule (France), Dr. Björlykke (Norway), Prof. Gottsche (Germany), Dr. van Waterschoot van der Gracht and Prof. Molen-graaff (Holland), Mr. Hinch (Ireland), Dr. Manson (U.S.A.), and Dr. Quilliam Bey (Liverpool).

CHAPTER III.

THE RECEPTION.

THURSDAY, SEPTEMBER 26TH, 1907.

By the evening of Wednesday, September 25th, most of the Visitors had arrived, and those who had been taking part in the excursions had also come back to London.

Much difficulty had been experienced in securing a hall of convenient size for the Reception and Addresses of the opening day. The difficulty was solved by the Institution of Civil Engineers, which most generously placed its theatre, in Great George Street, at the disposal of the Society. The room was admirably adapted for the purpose and of such a size that it was just filled, but not crowded, by the distinguished Visitors who gathered in it on Thursday, September 26th. The Officers of the Institution had considered the convenience of the Society in every way, and had spared neither time nor trouble in assisting the Society's Officers and Committee in completing the final arrangements. The Society is deeply indebted to the Institution for its kindness and courtesy, to which no small part of the success of these two meetings was due.

The middle block of seats in the theatre was numbered and reserved for the Official, Foreign, Colonial, and British Visitors, including Foreign Members, Foreign Correspondents, Delegates, Foreign, Colonial, and British, and individual Foreign Guests. In the side blocks were placed the Lady Visitors, the members of the Press, members of the Reception Committee not otherwise placed, and the British and Colonial Fellows of the Society who were not Delegates. This arrangement was adopted for both morning and afternoon meetings.

The ceremony of Reception was fixed for 11 A.M., and began punctually with the delivery of a few words of welcome addressed to the meeting by the President. The following letters and telegrams were read:—

THE NATIONAL MUSEUM OF BUENOS AYRES and
Dr. FLORENTINO AMEGHINO.

Impossibilité pour assister personnellement, je m'associe, en mon nom et au nom du Musée National de Buenos Aires, à la célébration du Centenaire de la Société qui a donné tant d'éclat et une si grande impulsion à l'avancement des sciences géologiques dans le siècle dernier, faisant des vœux pour qu'à l'avenir son rôle dans la science soit de plus en plus brillant.

FLORENTINO AMEGHINO.

THE UNIVERSITY OF VIENNA and Professor VICTOR UHLIG.

In Vienna University's and our own name congratulations for Centenary. May famous old Society, so often our guide, gain new glory in coming century.—UHLIG.

THE UNIVERSITY OF INNSBRUCK and Professor JOS. BLAAS.

Die Universität Innsbruck sendet der ältesten geologischen Gesellschaft der Welt die herzlichsten Glückwünsche zu ihrem hundertjährigen Wiegenfeste.—RUDOLF VON SCALA, der zt. Rektor.

Vivat, floreat, crescat, the oldest Geological Society, during many centuries.—BLAAS, Innsbruck.

THE UNIVERSITY OF LEMBERG.

Sir,

The Senate of the University of Lemberg regrets not being able to send a delegate to the Celebration of the Geological Society of London. Instead, the Senate begs you the favour to transmit kindly its best wishes to the illustrious Society, and hopes the Society may continue for ever its past and present activity—for the glory of Science.—GLUZIŃSKI, Rector.

THE IMPERIAL ACADEMY OF SCIENCES OF VIENNA.

Kaiserliche Akademie beglückwünscht die Gesellschaft am Ende eines Jahrhunderts höchst fruchtbarer Arbeit und wünscht ihr weitere Erfolge.—Suess, Lang.

THE MINERALOGICAL SOCIETY OF VIENNA.

Die Wiener Mineralogische Gesellschaft sendet der Geological Society zur Jahrhundertfeier frohen collegialen Gruss, mit dem Wunsch ihr Ruhm möge dauerhaft bleiben wie die Früchte ihrer Arbeit nimmer vergehen werden.—BERWERTH, Präsident.

THE NATURAL HISTORY SURVEY OF BOHEMIA.

The Presidency of the Comité für naturwissenschaftliche Landesdurchforschung von Böhmen congratulates the Geological Society of London on her Centenary.—Prince FERDINAND LOBKOWITZ, President.

Professor E. SUESS, Vienna.

Mr. President,

On the one hundredth birthday of the British Geological Society every true scholar of our great science all round the earth bows in respectful remembrance of the illustrious masters, who have founded this our oldest corporation and who have led her on to the glorious position of to-day.

In unremitting pursuit of the Verulamian task '*ad ulteriora penetrare*' set by her first President Greenough at the head of her first volume, this Society has grown up to be a model of earnest and united scientific work and an ornament of her great country.

This universal homage is not only rendered to posterity but also to the brilliant present and is united with the persuasion, that at this place neither eminent leaders nor devoted and enthusiastic recruits will ever be wanting.

I humbly beg leave, to join the crowd of congratulation, moved at the same time by heartfelt gratitude for the highest honours bestowed on me, and pray, kindly to give notice of these my feelings to the Society.

I remain, Mr. President,

Your very obedient,

E. SUESS.

Dear Sir Archibald,

This is really a day on which I feel the burden of age. How happy would I be, to pass the 26th among my dear and cherished Masters. I beg you, as far as opportunity permits, to remember me to all friends.

Your respectful,

E. SUESS.

Hofrath EDMUND VON MOJSISOVICS, EDLER ZU MOJSVÁR, Vienna.

Durch schwere Krankheit verhindert persönlich zu der ruhm-vollen Einhundertjahrfeier zu erscheinen, sende auf diesem Wege herzlichste Glückwünsche zu weiterem Blühen und Gedeihen.

MOJSISOVICS.

THE UNIVERSITY OF BERLIN.

Zur hundertjährigen Jubelfeier der geologischen Gesellschaft sendet die Universität Berlin herzliche Glückwünsche.—KAPTAN, Rektor.

THE UNIVERSITY OF HEIDELBERG and Hofrath Prof. O. BÜTSCHLI.

Der akademische Senat unserer Universität hatte den Dekan der naturwissenschaftlichen Fakultät Herrn Professor Dr. Bütschli beauftragt, der Geological Society mündlich unsere herzlichsten Glückwünsche zu Ihrer Säcularfeier darzubringen. Leider ist Herr Professor Bütschli durch Krankheit verhindert unserem Auftrage nachzukommen.

Wir bitten daher, die beifolgende schriftliche Gratulation unserer Universität freundlichst entgegennehmen zu wollen.

Prof. GEORG JELLINEK, d. zt. Prorektor.

Geheimrath Professor HEINRICH ROSENBUSCH, Heidelberg.

Societas Geologorum Londinensis multa vivat, floreat, crescat in sæcula.—ROSENBUSCH.

THE KAISER WILHELM UNIVERSITY OF STRASBURG.

Sendet zu Jubiläum herzlichen Glückwunsch der Rektor der Kaiser-Wilhelms Universität, Strassburg.—KNAPP.

THE UNIVERSITY OF FREIBURG-IM-BREISGAU.

Die Albert-Ludwigs Universität zu Freiburg-i.-B. wünscht der um die Geologie so hochverdienten Geological Society zu ihrem hundertsten Geburtstage ein gleich ergebnisreiches und für die Wissenschaft bedeutsames zweites Jahrhundert, und gratuliert herzlichst.—BRAIG, d. z. Prorektor.

THE GEOLOGICAL SURVEY OF ELSSASS-LOTHRINGEN.

Herzliche Glückwünsche zur Centennarfeier und Wünsche für weiteres Gedeihen sendet die Geologische Landesanstalt von Elsass-Lothringen.

THE GEOGRAPHICAL SOCIETY OF GREIFSWALD.

Zur Centennarfeier erlaubt sich die Geographische Gesellschaft zu Greifswald herzlichste Glückwünsche darzubringen mit dem Wunsche weiterer gleich erfolgreicher und ruhmvoller Wirksamkeit im neuen Jahrhundert.—Dr. RUDOLF CREDNER, Präsident.

Professor FRANZ EUGEN GEINITZ, Rostock.

Zu der Hundertjahresfeier der berühmten Geological Society spreche ich der Gesellschaft meinen aufrichtigsten Glückwunsch aus.

Schon in meiner Jugend sind mir durch meinen Vater die hervorragenden Leistungen der Gesellschaft bekannt geworden und später habe ich vielfach Gelegenheit gehabt, ihre wissenschaftlichen Arbeiten bewundern zu können.

Ich bedaure ungemein, dass ich nicht persönlich meine Glückwünsche aussprechen kann, und bitte, auch aus der Ferne, mein herzlichstes Glückauf entgegennehmen zu wollen.

EUGEN GEINITZ.

Baron MAURICE DE KOMOROWICZ, Charlottenburg.

Monsieur le Président,

Je vous suis infiniment obligé de la flatteuse invitation au Centenaire de la Société Géologique, que vous avez bien voulu m'adresser. Croyez bien, je vous prie, à toute ma reconnaissance, et aussi à mes profonds regrets de ne pouvoir y répondre. Revenu chez moi après une absence de six mois, mon départ est empêché pour le moment par des affaires de famille qui réclament ma présence.

Cependant j'espère venir à Londres dans le cours de l'hiver, et alors j'aurai l'honneur de vous présenter personnellement tous mes remerciements. En attendant, Monsieur le Président, veuillez recevoir l'expression de mes sentiments respectueux et distingués.

Votre tout dévoué,

MAURICE DE KOMOROWICZ.

Professor CONRAD EBBEKE, Munich.

Aufrichtigst bedauernd Jubelfeier nicht beizuwohnen sendet herzliches Glückauf.—EBBEKE, Munich.

Count H. zu SOLMS LAUBACH, Strasburg.

Best wishes to Society's birthday.—Count SOLMS.

THE GEOLOGICAL SOCIETY OF ITALY and Professor FEDERICO SACCO.

La Società Geologica Italiana prende viva parte alla celebrazione centenaria della gloriosa consorella inglese, augurando che l'avvenire

della Geological Society of London corrisponda, come è certo, al suo illustre e famoso passato, e che sempre più si accentuino e si consolidino i sentimenti e i cordiali rapporti fra la grande Società geologica inglese e le Società geologiche di ogni parte del mondo, fra le quali ultime piccola, giovane, ma animata da forte amore di lavoro è la Società Geologica Italiana, di cui ho l'alto onore d'essere oggi il Presidente e quindi l'estensore di questi cordiali augurii e voti.

Prof. FEDERICO SACCO.

THE IMPERIAL GEOLOGICAL SURVEY OF JAPAN.

Sir,

Many thanks for your kind letter, inviting us to send a delegate to attend the glorious Celebration of the hundredth birthday of your Society.

Your Society, born at the cradle-age of geology, has indeed rendered great service to the progress of natural science in the world. As the Celebration is an important occasion in the history of the advancement of the science, we greatly desired to take part in it. I, however, inform you, to my great regret, that our Institution is unable to send a delegate owing to various circumstances.

Again with many thanks for your kind invitation, and earnestly hoping that the Celebration will enjoy great success,

I have the honour to remain, Sir,

Yours respectfully,

KINOSUKE INOUE,

Director.

THE GEOLOGICAL SOCIETY OF TOKYO.

Dear Sir,

The Geological Society of Tokyo thinks it a great honour to join in the universal chorus of congratulation on the Centenary celebration of your Society, and sincerely hopes for its equally glorious future.

Your obedient servants,

KINOSUKE INOUE,	} Secretaries.
NAOMASA YAMASAKI,	

Professor JOHAN H. L. VOGT, Christiania.

The oldest Geological Society in the world, which has always been at the head of scientific investigation, may look back on its work with satisfaction. Old England may well feel pride in her offspring and will, I am sure, solemnise its hundredth birthday with due ceremony.

It was my great wish to take part in the Centenary celebration, to which you have been so kind as to invite me; but I am sorry that, for several reasons, it is impossible for me to come to England at the present time.

Yours truly,

JOHAN H. L. VOGT.

THE IMPERIAL UNIVERSITY OF ST. PETERSBURG and

Professor A. A. INOSTRANZEW.

Sending herewith the address, I have the honour to communicate that Dr. A. A. Inostranzew, who was chosen by the Imperial University of St. Petersburg as delegate, cannot, by reason of illness, be present at the jubilee.—Rector of the University,

Dr. J. BORGMANN.

THE IMPERIAL UNIVERSITY OF KHARKOV.

The Imperial University of Kharkov, regardful of the great services rendered by the Geological Society of London to the advancement of science, has the pleasure of sending hearty congratulations to the Society on the days of the celebration of its Centenary, and fervently wishes that the Geological Society of London may continue to flourish and prosper.—BAGALEX, Rector.

THE IMPERIAL SOCIETY OF NATURALISTS, ST. PETERSBURG.

The Imperial Society of Naturalists of St. Petersburg, expressing its profound esteem for the eminent scientific activity of the Geological Society of London, sends its best salutations to the hundred yearly jubilee.—Professor INOSTRANZEW, President.

M. ALEXANDER PETROVICH KARPINSKY.

Deign, dear President, to present to Geological Society my respectful congratulations. Very sorry to be absent.—KARPINSKY.

THE IMPERIAL HIGH SCHOOL OF ENGINEERS, MOSCOW.

The Council of the Imperial High School of Engineers in Moscow expresses its hearty congratulations to the most respected and oldest Geological Society in the world upon the celebration of the Centenary of its existence, and of this festival of geology and natural science, and sends its cordial good wishes for the future prosperity of the Society.—President of the Council, EICHENWALD.

Professor SVANTE ARRHENIUS, Stockholm.

Professor HELGE BÄCKSTRÖM, Djursholm.

Professor BARON GERARD DE GEER, Stockholm.

Professor GERHARD HOLM, Stockholm.

Please receive our most hearty and respectful congratulations for the beginning of a new glorious seculum.—DE GEER, BÄCKSTRÖM, ARRHENIUS, HOLM.

Professor ARCHIBALD LIVERSIDGE, Sydney.

Sydney, September twenty-sixth, cordial congratulations and best wishes.—LIVERSIDGE.

THE ROYAL PHILOSOPHICAL SOCIETY OF GLASGOW.

Dear Sir,

The Council have appointed James Knight, M.A., D.Sc., F.G.S., to represent this Society at the celebration beginning on the 26th inst., and meantime send their heartiest congratulations to your Society on the prosperity it has attained and the great work it has done during the hundred years it has been in existence.

Yours faithfully,

PETER BENNETT, Secretary.

I appreciate the honour the Society has done to me in electing me a member of the Reception Committee on the occasion of its anniversary, but I cannot be present on account of my great age, only ten years less than that of the Society itself.

OSMOND FISHER.

Dr. MARIA M. OGILVIE GORDON, Aberdeen.

Mrs. Ogilvie Gordon desires to do honour to the Geological Society of London, and sends kind greetings to its President, Fellows, and Guests.

The Official Visitors had been grouped according to their Countries or Colonies. The groups were received by the President in alphabetical order, the names of the members of each group, and the Institutions represented by them, being announced by one of the Secretaries. Many of the Delegates bore addresses of congratulation and good wishes, which they presented to the President as they passed the Chair.

One Delegate from each Country, one Colonial Delegate, and three British Delegates had been previously asked to address the Meeting if they desired to do so, the speakers limiting themselves to three minutes each. So well was this rule observed that the Reception passed off very smoothly and quickly. A list of the speakers is given below, and, where it has been possible to obtain the substance of their speeches, this has also been printed.

Austria-Hungary	Dr. E. E. A. Tietze.
	M. Bela de Inkey.
Argentine Confederation	Professor Don Eduardo Aguirre.
Belgium	M. Michel F. Mourlon.
Denmark	Dr. K. J. V. Steenstrup.
Egypt	Captain H. G. Lyons.
France	Professor Jules Gosselet.
German Empire	Professor F. Zirkel.
Greece	Professor Theodoros G. Skouphos.
Holland	Professor A. Wichmann.
Italy	Professor T. McKenny Hughes.
Japan	Professor F. Omori.
Mexico	Dr. José G. Aguilera.
Norway	Professor W. C. Brögger.
Russia	Dr. Th. Tschernyschew.
Sweden	Professor A. G. Nathorst.
Switzerland	Professor Armin Baltzer.
United States	Dr. Arnold Hague.
British Colonies and Dependencies.....	Professor F. D. Adams.
Great Britain, Universities	{ Professor W. J. Sollas.
	{ Professor T. McKenny Hughes.
Great Britain, Learned Societies	Mr. A. B. Kempe.

The Addresses presented by the Delegates were, many of them, of great beauty and artistic merit. They are much treasured by the Society, and have been carefully preserved in the Library. They have been transcribed, and are printed below.

AUSTRIA-HUNGARY.

The representatives of Austria-Hungary were first summoned to the dais. Dr. EMIL ERNST AUGUST TIETZE, Director of the Geological Survey, addressed the meeting on behalf of his Austrian colleagues. He was followed by M. BELA DE INKEY, who added a few words on behalf of Hungary.

The Delegates were then welcomed in turn by the President: they shook hands with him, and presented the Addresses which follow here:—

THE UNIVERSITY OF CRACOW.

VIRI CLARISSIMI!

QUOD ad sollemnitatem Vestram celebrandam Universitatem quoque Jagellonicam comiter invitastis, id profecto summo nos gaudio affecit ac libentissime legatum nostrum ad Vos mittere constituimus, qui cum sinceram admirationem, tum officii plenam pietatem, qua viros scientiarum amantes erga societatem Vestram imbutos esse decet, exprimeret, præterea vota mandaret quibus celebrem Vestrum conventum prosequimur. Etenim per centum annorum decursum societas Vestra egregia inexhausto cum ardore scientiæ, quæ geologia nuncupatur, vias commonstrabat, operibus edendis universo terrarum orbi exempla præbebat eximiæ in minutis rebus tractandis diligentiae perinde atque sublimis cuiusdam animi in rerum natura pervestiganda. Quod vero difficiles explicatu materias et intricatas quæstiones presso semper et dilucido sermone explanare conati estis, id non minorem laudem laboribus Vestris conciliavit. Ut igitur societas Vestra præstantissima, quæ tamquam fons copiosus et perennis complurium iam generis humani ætatum studia irrigavit, floreat porro atque largo strenuorum virorum, ut Rodericus Murchison et Carolus Lyell, proventu illustretur, hoc est in votis atque eo animo salutem et felices progressus Vobis precatur Universitas Jagellonica Cracoviensis.

Cracoviæ, Kal. Septembribus.

Rector et Senatus Universitatis Jagelloniæ Cracoviensis,

K. OLSZEWSKI.

THE UNIVERSITY OF GRAZ.

REKTOR und Senat der k.-k. Karl Franzens-Universität in Graz sprechen für die freundliche Einladung zur Jahrhundertfeier der Gründung Ihrer Gesellschaft den besten Dank aus. Da eine persönliche Vertretung unserer Hochschule bei der Feier nicht möglich ist, bitten wir, den schriftlichen Ausdruck der Glückwünsche zu dieser schönen Feier entgegenzunehmen, welche allen Kulturvölkern in Erinnerung bringt, dass sie das Aufblühen der Geologie in erster Linie England zu danken haben. Möge es

Ihrer Gesellschaft, die Männer wie Lyell und Darwin und so viele Leuchten der Naturwissenschaft mit Stolz zu ihren Mitgliedern zählen konnte, vergönnt sein, auch durch fernere Jahrhunderte sich darüber zu freuen, dass die Geologie in England zuerst und allezeit seither emsige Pflege fand.

Möge es nie an Männern fehlen, die jenen Heroen dieser Wissenschaft nachzueifern bestrebt sind, welche alle Nationen zu Gefühlen der Hochachtung und Dankbarkeit gegen Ihr Vaterland verpflichteten.

Universität Graz, am 16. September 1907.

Der Rektor :
Dr. C. DÖLTER.

Der Gegenzeichner :
Dr. FR. WINTER.

KARL-FERDINAND BOHEMIAN UNIVERSITY, PRAGUE.

Celeberrimæ et antiquissimæ Societati Geologorum londiniensi
alma et antiquissima C. R. Universitas Carolina Ferdinanda
Bohemica pragensis.

Ex quo abhinc annos centum viri aliquot doctissimi et clarissimi Londini convenerunt, ut societate condita geologiam summo studio colerent, multa eaque gravissima ab eiusdem societatis sodalibus inventa sunt, quæ nunc per totum orbem terrarum propagata universo generi humano maxime prosunt.

Quantopere indefessus sodalium londiniensium labor ad geologiæ studia in aliis terris excitanda et promovenda valuerit, eius rei exemplum unum afferre liceat. Postquam Murchison, vir summus, libro, qui Siluria inscribitur, descripsit et accurate definivit eam terræ formationem, quæ postea multis locis inventa et agnita est, Barrande, vir clarissimus, eiusdemque Societatis Geologorum londiniensis sodalis, magistri unici vestigia premens eandem formationem in ipsa Bohemia nostra perscrutatus descripsit eis voluminibus, quorum laus per omnes gentes percrebuit. Neque silentio prætereundum est Societatem Geologorum londiniensem nostros viros doctos, qui in exploranda Bohemia, patria sua, mirabilem in modum geologicæ conformata, studium et operam posuerunt, summo semper amore et favore amplexam esse.

Quam ob rem universitas nostra pragensis bohemica summorum meritorum, quæ Societas Geologorum londiniensis per hos centum annos ad geologiæ notitiam augendam et amplificandam sibi paravit, haud immemor, diebus, quibus Societas Geologorum londiniensis centenuaria celebrabit, qui dies sunt a. d. VI-IV Cal. Octobris, Societatem Geologorum londiniensem optimis omnibus prosequetur exoptans, ut etiam in posterum via novis inventis plena progrediatur et inter geologiæ cultores locum semper obtineat primum.

Datum Pragæ Calendis Septembribus Anni MCMVII. Ab Universitate nostra condita quingentesimi undesexagesimi.

THE IMPERIAL ROYAL GEOLOGICAL SURVEY OF AUSTRIA.

Die kaiserlich-königliche Geologische Reichsanstalt in Wien nimmt den lebhaftesten Antheil an der Centennar-feier der Geologischen Gesellschaft in London. Fast alle hervorragenden und bedeutenden Geologen Englands haben an den Arbeiten dieser Gesellschaft theilgenommen und ihre Namen zieren deren Mitglieder-Listen. Die Geschichte der Gesellschaft ist also zu einem grossen Theil auch die Geschichte der Geologie in England. Bei der Grösse der vielfach bahnbrechenden Erfolge, welche speziell von englischen Geologen errungen worden sind, ist aber die Entwicklung der Geologie in England auf das Engste verbunden mit dem allgemeinen Fortschritt unserer Wissenschaft überhaupt.

Sinn für Beobachtung und Werthschätzung derselben, ebenso wie die Fähigkeit, die verschiedenen Beobachtungen gesetzmässig zusammenzufassen, ein praktischer und gesunder Verstand, welcher selbst bei der genialsten Auffassung allgemeiner Probleme die Grenzen respektirt, welche der nüchternen Forschung gezogen sind und der sich des Unterschieds von Hypothese und Thatsache bewusst bleibt, das sind die Vorzüge der grossen Mehrheit der englischen Geologen, und diesen Vorzügen der englischen Schule verdankt die Geologie, soweit sie als exakte Wissenschaft gelten kann, einen grossen Theil der bleibenden Ergebnisse, welche den sicheren Besitzstand dieser Wissenschaft bilden.

Für diese Leistungen sind die Vertreter der Geologie in allen Ländern den englischen Collegen Dank schuldig. Diesen Dank auch unsererseits auszusprechen, dazu bietet sich bei diesem Jubiläum eine der schönsten Gelegenheiten. Mögen die englischen Geologen, und möge insbesondere auch die Geologische Gesellschaft in London auch in der Zukunft im Geiste der alten Tradition weiterarbeiten, zum Besten eines sicheren, durch fleissige Arbeit und ruhiges Urtheil geleiteten Fortschrittes der Wissenschaft. In diesem Sinne bringen wir der geehrten Gesellschaft unsere aufrichtigen Glückwünsche dar.

Die Direktion der Kaiserlich-Königlichen Geologischen Reichsanstalt in Wien,

EMIL TIETZE.

Wien, im September 1907.

THE GEOLOGICAL SOCIETY OF HUNGARY.

THE Geological Society of England having invited the sister societies all over the world to assist the celebration of its secular Jubilee, the Geological Society of Hungary has accepted this kind invitation with the greatest pleasure, as it offers its members the long-wished-for occasion to express feelings of sympathy and admiration for their elder sister society and to present their best wishes for its further prosperity.

The foundation of such a society, a hundred years ago, at a time when geological science was yet in its infancy, the incessant and intense cultivation of this science by its members, up to our days, and the splendid results of all this labour known to the world and admired by it: all this seems to prove that Francis Bacon's splendid axiom, 'Knowledge is Power,' was best understood and applied practically by his own countrymen. In this sense we may consider the English Geological Society as one of the builders of England's greatness.

Considering further that the mental and physical power of England has founded an empire which spreads all around the globe, so that its ruler may boast with more right than did Charles of Spain, that the sun never sets in its limits, we must conclude that England coming in close contact with nearly all the other nations has the vocation of forming the link between them, not only as far as trade and general culture are considered, but especially as to those scientific pursuits whose object is the knowledge of our planet. This seems to be the principal meaning of the international assembly that is to gather now around the oldest of geological societies, to participate in the celebration of its hundredth anniversary.

Among them the Geological Society of Hungary is one that counts only half that age (having been founded in the year 1851), one that cannot boast of the same number of members, the same wealth, or even the same mass of scientific publications as many others; but it is not inferior in the ardour with which we all strive towards the same scientific aim, and is therefore fully able to appreciate the greatness of the work performed by the geologists of England.

The Geological Society of Hungary therefore joins gladly and with all her heart in the chorus of congratulations, wishing Long Life and Prosperity to the Geological Society of London!

Budapest, September 26th, 1907.

Prof. Dr. A. Косч,

President of the Hungarian Geological Society.

ARGENTINE CONFEDERATION.

The Argentine Confederation followed, represented by Professor Don EDUARDO AGUIRRE, the Delegate of the University of Buenos Ayres, and Dr. ARTHUR SMITH WOODWARD, F.R.S., representing the Museum of La Plata. The former addressed the meeting in Spanish on behalf of the Confederation.

BELGIUM.

M. MICHEL MOURLON, Director of the Geological Survey of Belgium, spoke on behalf of that country, and the following Addresses were presented :—

THE CATHOLIC UNIVERSITY OF LOUVAIN.

THE Geological Society of London, by whose laborious researches the study of geology has been so greatly enriched during the last century, merits grateful recognition from the scientific world. By sending a delegate to the Centenary of the Society, the Catholic University of Louvain wishes to testify its great estimation for the preponderant part taken by British scientists in the marvellous development of the most recent amongst natural sciences.

A special acknowledgment must be made of the value of the light thrown by their works upon the geology of Belgium, which has so many points of contact with that of England and Ireland.

Moreover, as an independent University in the free land of Belgium, the occasion calls for an expression of gratitude to the English nation, to whose constant and steady protection Belgium owes the continuance of her independence as a nation and who afforded us the prototypes of the free institutions which have made possible the reconstitution of the ancient University and attainment of its present footing of efficient prosperity.

British genius, with its analytical intensity, its profound and patient investigation into manifold facts, its broad and yet conclusive synthesis by means of a subtle process of induction and a singular logical power of drawing conclusions, while not attenuating the difficulties of their acceptance, merits unfeigned and cordial admiration. These methods, which proved so successful in the development of the ideal preconceived in past ages by two great Englishmen, Roger and Francis Bacon, are especially necessary in the study of the problems relating to the origin of our planet and its inhabitants.

In this connexion, many dead and living authors of your Society might be cited. But it is sufficient to name here two great men only, who, in my opinion, personify most perfectly British genius : Charles Lyell and Charles Darwin.

The Institute of Geology of the University of Louvain, desirous of offering a lasting expression of its appreciation of British genius, has decided to dedicate two of its sections to the memory of these two great men ; and this event, coinciding with the Centenary of the London Geological Society, will ensure a constant remembrance of a noteworthy and important anniversary.

Louvain, September 26th, 1907.

CANON HENRY DE DORLODOT,

Delegate from the Catholic University of Louvain.

THE ROYAL ACADEMY OF SCIENCES, BRUSSELS.

DÉLÉGUÉ par l'Académie Royale des Sciences, des Lettres et des Beaux-Arts de Belgique pour prendre part à la célébration du centenaire de la Société géologique de Londres, dont je m'honore d'être l'un des élus, je me fais un devoir de lui apporter ici le salut confraternel, non seulement de notre vieille institution, dont la fondation remonte à 1789, mais aussi de tous les géologues belges, comme notre éminent et sympathique président, Sir Archibald Geikie, a bien voulu m'y convier.

Afin de ne point dépasser les quelques minutes strictement nécessaires accordées au représentant de chaque pays, je me bornerai, s'il est reconnu que l'importance du mouvement scientifique d'un pays ne se mesure pas à l'étendue de son territoire, à exprimer la reconnaissance de notre petite Belgique pour l'œuvre géniale des maîtres en tous pays, qui lui a permis d'inaugurer en quelque sorte les voies nouvelles de la documentation géologique.

Parmi ces sommités de la science, qui furent les contemporains de notre regretté et vénéré maître, d'Omalius d'Halloy, il faut citer en première ligne, les William Smith, les Greenough, les Phillips, les De la Beche, les Buckland, les Sedgwick, les Murchison, et tant d'autres à qui l'on doit les principaux types de la géologie mondiale et qui figurent avec le plus grand honneur au nombre des fondateurs de la Société géologique de Londres.

J'ajouterai qu'en parcourant la liste des membres de celle-ci publiée en Novembre 1864, on y voit figurer le nom du fondateur de notre dynastie, Sa Majesté le Roi des Belges, Léopold I^{er}, qui fut élu dès 1831, comme il le fut également à la célèbre et très ancienne Société Royale de Londres. On se rappelle que notre Souverain avait épousé en 1814 la Princesse Charlotte, fille unique du Régent et héritier du trône d'Angleterre.

Qu'il me soit permis maintenant de ne point terminer cette courte allocution sans rappeler qu'antérieurement aux faits historiques qui précèdent, des liens d'autant plus étroits nous unissaient à l'Angleterre que celle-ci ne fut séparée de nos régions depuis l'apparition de l'homme, que par l'arrivée de la mer quaternaire flandrienne relativement peu ancienne.

Et ce qui n'est peut-être point inutile de noter en l'occurrence, c'est que dans nos formations primaires les plus anciennes qui ne sont que le prolongement de celles des régions classiques du Devonshire, du pays des Silures et de celui des Cambres, nous retrouvons sous la forme d'arkoses ce que l'on considère maintenant en Belgique comme constituant des déjections d'anciens volcans de l'Angleterre à ces périodes reculées. Et ce sont précisément ces volcans que notre illustre président nous a si bien fait connaître par les remarquables travaux qui suffiraient à eux seuls à justifier la place si honorable qui lui est dévolue dans cette circonstance solennelle.

MICHEL MOURLON.

Membre de l'Académie, et Directeur du Service Géologique de Belgique.

THE ROYAL MUSEUM OF NATURAL HISTORY, BRUSSELS.

Le Musée royal d'Histoire naturelle de Belgique est heureux de se joindre aux nombreuses Sociétés représentées ici, pour féliciter la Société géologique de Londres à l'occasion de son Centenaire.

Nous nous remémorons, avec plaisir, les excellentes relations que notre Musée entretient avec votre Société depuis près d'un demi-siècle.

Nous n'oublions pas que vous avez toujours tenu à faire figurer plusieurs Naturalistes du Musée parmi vos Membres associés étrangers, et que vous leur avez, parfois, décerné vos médailles ou d'autres distinctions.

Mais, si nous contemplons ces choses avec reconnaissance, c'est avec admiration que nous nous souvenons des grands progrès accomplis par les Membres de la Société géologique de Londres dans le domaine de l'activité du Musée.

Le Musée de Bruxelles est régional. Il a pour but l'étude méthodique et approfondie de la Belgique à travers les âges géologiques. Pour le moment, notre Institution n'a pu livrer au public que la Salle des Vertébrés de ses Galeries Nationales.

Mais le groupe des Iguanodons évoque les noms de Mantell, d'Owen, de Huxley, de Hulke, de Seeley, de Lydekker, d'Andrews, comme la découverte des empreintes des gigantesques Dinosauriens de Bernissart amène ceux de Beckles, de Taylor, de Dawson,—tous membres de votre Société et dont les travaux ont généralement paru dans votre recueil.

Le groupe des Mosasaures rappelle le nom de Conybeare, qui les baptisa, et les importants mémoires d'Owen,—publiés dans votre *Quarterly Journal*.

Le groupe des Cétacés suggère les noms d'Owen, de Huxley, de Lydekker, de Newton,—qui sont, ou furent, des vôtres.

Le groupe des Cavernes, ceux d'Adams, de Dawkins, de Reynolds,—qui vous appartiennent aussi.

Vous avez donc préparé, par vos travaux, l'étude et la reconstitution des joyaux de notre collection de Vertébrés fossiles.

Le Musée de Bruxelles vous en remercie, et souhaite longue vie et brillante prospérité à la Société géologique de Londres.

L. DOLLO, Conservateur, Délégué.

Bruxelles, le 26 Septembre, 1907.

THE BELGIAN SOCIETY OF GEOLOGY, PALEONTOLOGY, AND HYDROLOGY,
BRUSSELS.

AU moment où les délégués de tant d'institutions savantes sont réunis pour vous fêter, la Société belge de Géologie tient à présenter ses sincères félicitations à la plus ancienne Société géologique du monde.

Votre Centenaire a groupé aujourd'hui des savants de toutes les nations. Les compétences les plus diverses nous entourent. Il serait impossible à chacun de mentionner tous les progrès qui vous sont dûs. Ne voulant pas empiéter sur des domaines où d'autres vous loueront mieux que moi, qu'il me soit permis de dire quelques mots de votre intervention dans la Paléontologie des Vertébrés.

Parlerai-je de la Classification des Poissons dévoniens de l'illustre Huxley? Ou des Restaurations incomparables des Poissons paléozoïques du Docteur Traquair et de sa brillante découverte de l'étroite parenté de *Palæoniscus* et de l'Esturgeon? Ou de l'indispensable Catalogue des Poissons fossiles du Docteur Smith Woodward? Travaux, qui, il est vrai, n'ont point paru dans votre recueil, mais qui sont, du moins, le résultat du talent et de l'activité des membres de votre Société.

Rappellerai-je les recherches fondamentales de Huxley sur la parenté des Dinosauriens et des Oiseaux? Ou son Mémoire capital sur l'Évolution des Crocodiliens, publiée, cette fois, dans votre *Quarterly Journal*?

Peut-on traiter, aujourd'hui, de la Paléontologie des Reptiles sans rencontrer constamment les noms d'Owen, de Hulke, de Seeley, de Lydekker, d'Andrews, dont les études ornent vos volumes?

N'est-ce point dans vos Transactions que furent imprimés d'abord les termes, maintenant si familiers, d'Ichthyosaure, de Plésiosaure, de Mégalosaure, et n'est-ce pas à deux d'entre vous que nous sommes redevables de ceux de Mosasaure et d'Iguanodon?

Et qui remplaça l'ancienne Classification des Ongulés, en Pachydermes, Ruminants et Solipèdes, par la division en Périssodactyles et en Artiodactyles, à présent universellement adoptée, si ce n'est Richard Owen dans votre *Quarterly Journal* pour 1848?

Enfin, puisqu'il faut se borner, n'est-ce pas un des membres de votre Société, le Docteur Andrews, qui a exhumé, récemment, en Égypte, les Ancêtres des Éléphants?

Vos rapports avec la Belgique datent de loin. Lyell et Prestwich sont venus étudier nos Terrains tertiaires. Vous avez honoré les membres de la Société belge de Géologie de vos distinctions, et nous constatons avec plaisir que les membres de la Société géologique de Londres forment presque le dixième de nos Membres honoraires.

Vous avez bien voulu nous envoyer un Délégué lors de la célébration de notre modeste biécennaire. Nous vous sommes reconnaissants de la cordialité que vous nous avez toujours témoignée.

Nous vous félicitons à nouveau des remarquables contributions apportées par vous aux Sciences géologiques et nous vous souhaitons de les continuer dans l'avenir par d'aussi importants travaux.

L. DOLLO, Ancien Président, Délégué.

THE GEOLOGICAL SOCIETY OF BELGIUM, LIÉGE.

La Société géologique de Belgique a l'honneur de présenter à la Société Géologique de Londres ses plus cordiales félicitations, à l'occasion de la célébration de son centième anniversaire.

En établissant un lien entre les géologues anglais, en leur permettant d'échanger leurs idées et de concentrer leur efforts la Société Géologique de Londres a puissamment contribué au développement des sciences minérales.

Certes la Grande Bretagne a été admirablement partagée au point de vue de la constitution de son sol, toute la série des formations géologiques y est représentée, on y trouve des exemples de tous les phénomènes qui ont marqué l'évolution de l'écorce terrestre, les gites minéraux y sont nombreux, les bassins houillers représentent une énorme richesse; mais pour mettre en lumière l'œuvre de la nature, pour mettre en valeur les richesses enfouies dans le sol, il a fallu les patientes recherches d'un grand nombre de géologues.

La Société Géologique de Londres, en leur permettant de se prêter un mutuel appui, a pris ainsi une large part dans le progrès des connaissances géologiques et a contribué pour beaucoup à mettre, à ce point de vue, l'Angleterre au premier rang des nations. Il suffit, pour s'en convaincre, de voir la série d'hommes éminents qui en firent autrefois partie et la pléiade de savants qui sont aujourd'hui à sa tête.

Aussi la Société géologique de Belgique est-elle heureuse de pouvoir profiter de l'occasion qui lui est offerte pour présenter à sa sœur aînée de Londres ses vifs sentiments d'admiration et lui souhaiter une longue continuation de sa glorieuse carrière.

DENMARK.

On behalf of Denmark Dr. K. J. V. STEENSTRUP spoke. The following Addresses were presented:—

THE ROYAL DANISH ACADEMY OF SCIENCES.

In thankful admiration of a century's fruitful work in the province of Geology, the Royal Danish Academy of Sciences sends its best greetings and congratulations to the Geological Society of London. We beg leave to add our homage to the number of those that the Society may rightly expect on this centenary. It would be merely a repetition of what is known throughout the geological world if we were here to rehearse the long series of highly important works and impulses which have had their starting-place in the Geological Society of London, and have secured for it an undisputed leadership. But, as representatives of Danish science, it is with

particular satisfaction that we are able on this occasion gratefully to lay stress on the fact that fundamental researches throwing light on the succession of Danish strata have repeatedly appeared in the Publications of the Society, while numerous others may be traced back to influences originating with members of the Society or due to its published Journal.

We sincerely wish and hope that the Society may prosper and keep progressing along the same glorious path that it has followed for a hundred years for the inestimable benefit of Science at large.

September 14th, 1907.

JULIUS THOMSEN, President.
H. G. ZEUTHEN, Secretary.

THE GEOLOGICAL AND GEOGRAPHICAL SURVEY OF GREENLAND.

THE Commission for the Geological and Geographical Survey of Greenland begs to have the honour of conveying to you its most hearty wishes on the occasion of the centenary of your Society, and expresses the hope that the Society will exercise in the future the same beneficial influence in the service of geology as during the past century.

Copenhagen, September 1907.

E. F. HANDEL.
K. J. V. STEENSTRUP.
G. HOHN.

THE GEOLOGICAL SOCIETY OF DENMARK.

THE Dansk Geologisk Forening sends its sincerest Congratulations to the Geological Society of London on its Centenary. We, and indeed every one, owe it our thanks, because through the Society founded by G. B. Greenough, not only has light been spread over the Classical Land of Geology, but even far beyond its boundaries. England's great names within the Geological Science have become all Nations' bright treasure.

We therefore in sincerest gratitude offer our Congratulations, while we at the same time express our confidence that the Geological Society of London will always know how to keep its place as Scientific Leader.

Copenhagen, September 1907.

K. J. V. STEENSTRUP.
J. P. J. RAVN.
V. HINTZE.
A. JESSEN.
O. B. BÜGGILD.
K. H. KOFOED.

EGYPT.

Captain HENRY GEORGE LYONS, R.E., D.Sc., F.R.S., spoke on behalf of Egypt, and presented the following Address:—

THE GEOLOGICAL SURVEY OF EGYPT.

IN the name of the Geological Survey of Egypt we beg through you to offer our heartiest congratulations to the Geological Society of London on the completion of its Centenary of beneficent activity. Founded by the Fathers of our Science, the Society has numbered in its ranks all the most distinguished exponents of geological study without distinction of nationality or position, and by cordial recognition has encouraged many a worker, to whom such high approval has been an incentive to further earnest effort.

We recognise with pleasure that the Society, though having attained the dignity of mature years, still retains the vigour and activity of its youth, and feel assured that its usefulness in the future will rival that of the past.

We offer these congratulations all the more readily, in view of the fact that every member of the Egyptian Geological Survey, both past and present, has also been a Fellow of your Society.

HENRY G. LYONS, Director General.
WILLIAM F. HUME, Superintendent.

September 26th, 1907.

FRANCE.

Professor JULES GOSSELET, of the University of Lille, spoke as follows:—

Monsieur le Président,

En ce jour où la Société géologique de Londres fête son centenaire, les géologues français vous adressent leurs félicitations les plus cordiales. Ils y ajoutent l'expression de leur reconnaissance pour les services que la Société géologique de Londres a rendu à la géologie.

En créant la Société géologique de Londres, vos illustres prédécesseurs ont ouvert l'ère des associations spéciales, où les membres limitent à une seule branche de la science l'exposé de leurs études. Les savants y trouvent un aréopage qui les comprend et qui peut apprécier et discuter leurs travaux.

Depuis cent ans vous avez maintenu au sein de votre Société ce principe de discussion courtoise, qui est un levain pour les idées nouvelles en même temps qu'un crible pour les erreurs. C'est cette habitude de discussion éclairée qui donne à vos publications un caractère propre et qui en rend la lecture si attrayante.

Vous l'aviez dès vos premières années. Constant Prévost, en

assistant à vos réunions, l'avait remarqué et avait apprécié le puissant encouragement qu'elle donne aux recherches scientifiques. Aussi, lorsqu'il songea à fonder en France une Société géologique à l'instar de la vôtre, il inscrivit sur son drapeau 'la libre discussion.'

Depuis plus d'un siècle, nous contribuons les uns et les autres au développement de la science géologique, aimant à franchir le détroit qui nous sépare pour échanger nos idées. Les géologues anglais nous ont souvent fait l'honneur de venir exposer les résultats de leurs études devant la Société géologique de France. C'est au sein de cette Société que Murchison a révélé les caractères paléontologiques du système dévonien qu'il avait étudié avec son ami Lonsdale et dont il avait rencontré les plus beaux fossiles aux environs de Boulogne.

Je me rappelle les séances agitées de notre Société, lorsque Prestwich venait discuter avec Hébert la stratigraphie des plus anciens étages tertiaires de la Champagne. J'ai encore devant les yeux le calme de Prestwich répondant à la parole bouillante d'Hébert. Malgré l'ardeur de la discussion scientifique, les deux géologues restèrent liés de la plus étroite amitié, et Prestwich légua à la Société géologique de France un témoignage de sa généreuse amitié.

Je suis heureux d'évoquer ces souvenirs. Ils montrent qu'entre les géologues français et les géologues anglais il y a plus qu'une estime réciproque ; il y a une cordialité de sentiments qui fait que votre fête est la nôtre et que nous vous souhaitons, autant en amis qu'en géologues, un nouveau siècle de prospérité et de progrès.

The Addresses which were presented are given below.

THE UNIVERSITY OF LILLE.

L'UNIVERSITÉ de Lille a l'honneur d'adresser ses congratulations à la Société Géologique de Londres, à l'occasion de son centenaire.

L'Université qui m'a confié la mission de vous présenter ses félicitations est l'université étrangère la plus rapprochée du sol britannique. Elle apprend à ses élèves qu'elle n'est séparée de vous par les eaux du Pas-de-Calais que depuis hier, et qu'elle vous est attachée depuis des millions d'années, par de solides fondations de craie, dont la continuité a été proclamée par De la Beche et par Fitton. Elle annonce la persistance, à travers les siècles à venir, de l'axe paléozoïque, forgé sous le détroit par Godwin-Austen et Murchison.

Ses auditeurs retrouvent la trace de Lyell sur les collines tertiaires des Flandres, et reconnaissent sous sa direction, comment ces témoins de notre union ont été détachés du bassin de Londres, grain à grain, goutte à goutte, et quel temps immense il a fallu pour accomplir cette œuvre de destruction.

Ses maîtres enseignent que la Nature aime mieux unir que diviser, et que le bombement du Weald, soulevé par elle, est devenu le pont sur lequel passe toujours l'âme des géologues, quand leur corps flotte d'un bord à l'autre du détroit. De cet observatoire

élevé ils contemplent, avec Prestwich et John Evans, leurs ancêtres passer chez vous, à l'âge du mammoth, à pied sec ; ils voient aussi vos fils s'ouvrir, dans la masse même de la craie, une glorieuse voie sous-marine, pleine de promesses pour le progrès de la géologie.

Ainsi, la leçon de l'Université de Lille est faite de reconnaissance et d'espérance, toute pleine de la pensée des géologues qui ont déchiffré l'histoire de son sol dans les falaises du sud de l'Angleterre.

Au nom du Conseil de l'Université,

CHARLES BARROIS.

THE ACADEMY OF SCIENCES, INSTITUTE OF FRANCE.

L'ACADÉMIE des Sciences de Paris adresse à la Société Géologique de Londres son salut et ses vœux.

Les souhaits de prospérité de l'Académie sont d'autant plus profonds que la dette des géologues français envers vous est plus grande, dans les glorieux échanges poursuivis au cours de ce siècle. C'est au temps où Cuvier et Brongniart publiaient chez nous leur description fameuse des environs de Paris, que la Société Géologique tint sa première réunion ; mais déjà avant cette époque, vous nous aviez donné, en Hutton, le fondateur de la géologie moderne : c'est à lui que nous devons la notion fondamentale du Temps en Géologie. Il brisa, le premier, les étroites limites imposées à cette science et lui ouvrit des horizons illimités sur l'univers physique, en lui assurant le règne du Temps, comme l'Astronomie avait celui de l'Espace.

Dans cette série des âges, Constant Prévost, d'Archiac, d'Orbigny, Deshayes, Lartet, Hébert, sont remontés confiants, ayant foi en la précision des études paléontologiques et en l'ordre qui existe dans la progression des types organiques. Ils marchaient à la lumière du principe directeur, posé par William Smith, que les strates sont caractérisées par leurs fossiles.

La route ainsi tracée aux premiers jours est restée droite et sûre. Sur son bord, on admire encore le noble monument écroulé de la théorie des révolutions du globe, comme plus loin, l'imposante forteresse des causes actuelles, édifiée par l'immortel Lyell et qui, maîtresse un jour du monde géologique, cède à son tour aujourd'hui, sapée et battue en brèche par les évolutionnistes.

Cependant le royaume de la Société n'a cessé de s'étendre. La fraternité de de Verneuil, de Murchison, de Sedgwick, les luttes de Barrande ont rendu le pays des Silures plus vaste que l'Empire Britannique même, vous donnant une sorte de 'home,' partout où il y a une terre silurienne.

Avec nous, vous avez échangé des provinces : le Jura pour le Devon ; des villes, comme Oxford et Portland pour Le Mans et Tours. Mais l'entente a été plus intime encore dans la pénétration du passé. La découverte de volcans anciens, due à Desmarest, n'a acquis sa portée que le jour où le savant illustre, dont le nom est

sur toutes les lèvres, eût ressuscité des volcans aux diverses époques géologiques, révélant ainsi à la Science, l'uniformité des manifestations ignées et de leurs produits, à travers tous les âges. De leur côté, les géologues du Jura et des Vosges, en décrivant au flanc de leurs montagnes, des glaciers disparus, ont permis à Ramsay, à Selwyn, d'en retrouver jusque dans les périodes les plus reculées des deux hémisphères.

Nous nous faisons un titre d'honneur des études de géologie expérimentale, des recherches pétrographiques des Daubrée, des Sainte-Claire-Deville, des Fouqué, mais nous ne saurions oublier que Sir James Hall fut le premier à montrer, par des exemples célèbres, que diverses questions relatives à la théorie de la terre pouvaient être résolues dans le laboratoire par des expériences directes; nous nous rappelons que Sorby fut le premier à étudier les roches au microscope.

Chez vous, Élie de Beaumont et Dufrénoy étudièrent, comme un modèle, la première carte géologique dressée par les fondateurs de la Société. Aujourd'hui, vos membres en ont tracé de semblables sous toutes les latitudes, aux Indes et en Australie, en Afrique et en Amérique. La carte du monde est couverte de leurs levers. Ils ont franchi les cimes des montagnes et pénétré dans les profondeurs du sol; ils ont enfoncé la sonde dans toutes les terres, comme dans toutes les mers, à la recherche de ce qui pourrait améliorer la condition matérielle de l'humanité, étendre le domaine des connaissances humaines, fournir des données nouvelles au grand problème des origines.

Votre Société centenaire a eu ce privilège, beau entre tous, d'être pour la Géologie le berceau des précurseurs et l'école des hommes d'avant-garde. Il est particulièrement doux à l'Académie des Sciences de le rappeler en ce jour solennel, où sont évoqués les maîtres illustres du passé, devant tant de maîtres éminents du présent; elle souhaite à la Société Géologique, pour son second siècle d'existence, un rayonnement digne de ses débuts.

CHARLES BARROIS.

THE GEOLOGICAL SOCIETY OF FRANCE.

LA Société géologique de France se félicite de ce que la date de sa fondation succédant de si près à la reconnaissance officielle du groupement qui s'était formé à Londres dès 1807, lui confère le droit d'être la première à saluer, le jour de son Centenaire, la doyenne de toutes les associations ayant pour objet direct le développement de la Géologie.

Ce fut vraiment une idée de génie, quand Greenough et ses amis concurent le projet de se réunir périodiquement, non seulement pour s'entretenir des recherches qui les intéressaient, mais avec le dessein, nettement formulé dans les Transactions de 1811, d'examiner 'jusqu'à quel point les opinions professées par ceux qui avaient écrit sur la géologie étaient en conformité avec les faits que la nature nous présente.'

Pour la première fois, l'observation rigoureuse était appelée à contrôler des vues où jusqu'alors l'imagination avait souvent tenu trop de place. De ce contrôle, les fondateurs de la Société attendaient avec raison un rapide progrès de nos connaissances. Ils avaient clairement entrevu 'qu'il n'y a pas une branche de la recherche où la co-opération des personnes soit plus nécessaire qu'en Géologie,' alors surtout qu'il s'agissait d'une science à ses débuts. C'était bien d'ailleurs dans le pays de William Smith qu'il convenait qu'une telle initiative fût prise.

Ce qu'a été sa fécondité, l'histoire du développement de notre science le dit assez. Partout s'est affirmé le caractère essentiellement sociable de la Géologie, cette discipline où la justesse des vues a pour garantie le nombre et la comparaison des faits recueillis en tous lieux, de sorte que, à l'inverse des autres sciences, qui se développent surtout dans le laboratoire, la nôtre tire son principal profit des vues échangées, sur le terrain même, entre savants mettant en commun l'expérience acquise dans les contrées les plus diverses. Par cet échange périodique, à l'institution duquel la Société géologique de France se flatte d'avoir tout spécialement contribué, et que les Congrès internationaux devaient un jour porter à son apogée, il a pu s'établir, entre Géologues de toutes les nations, une confraternité et une cordialité de rapports éminemment propres à faciliter le rapprochement des peuples.

Combien ces rapports sont devenus intimes, c'est ce dont témoignent, d'un côté les récompenses plus d'une fois accordées à nos compatriotes par la Société géologique de Londres, de l'autre l'inscription à perpétuité, sur nos listes, de noms tels que celui de Sir Joseph Prestwich, fondateur d'un prix que la Société géologique de France a désormais le privilège de distribuer.

Pour s'être faite l'initiatrice d'un mouvement d'association qui devait avoir de si heureuses conséquences, la Société géologique de Londres, toujours jeune et florissante en dépit de son âge, a bien mérité non seulement de la Science, mais de l'Humanité.

C'est ce qu'aiment à proclamer ceux qui, de l'autre côté du détroit, consacrent leurs travaux à la partie méridionale du Bassin Anglo-Parisien, cette unité géologique par laquelle il semble que la nature se soit plu à préparer l'entente cordiale de deux grands peuples.

Au nom du Conseil de la Société géologique de France et par délégation du Président.

Septembre 1907.

THE GEOLOGICAL SOCIETY OF THE NORD.

La Société Géologique du Nord vient joindre ses acclamations à tant d'autres pour célébrer l'anniversaire d'une date mémorable dans l'histoire de la Géologie.

La fondation de la Société Géologique de Londres a ouvert l'ère

des associations qui limitent à une branche spéciale l'exposé et la discussion des études de leurs membres. Les auteurs y trouvent un auditoire sympathique, qui les entend avec plaisir et qui, mieux que tout autre, peut apprécier leurs travaux et les discuter.

Cette habitude de discussion éclairée, qui joue un grand rôle dans vos séances, a donné à l'école géologique anglaise le caractère qui lui est propre. Sans négliger les faits par eux-mêmes indiscutables, mais sans trop s'y attarder, vous aimez à poser les questions sujettes à controverse, c'est-à-dire, à rechercher les causes et les origines. C'est ce qui donne tant d'attrait à vos mémoires et aux autres publications géologiques anglaises.

Une des conséquences naturelles de la création de votre Société fut le grand développement des idées géologiques sur le sol britannique. Sous son égide et guidées par quelques-uns de ses membres, des sociétés géologiques naquirent à Édimbourg, en Cornouailles, à Leeds, à Liverpool, à Manchester, à Norwich, etc.

Les heureux résultats obtenus par votre association lui suscitèrent des imitateurs sur le continent. Dès 1830, la Société Géologique de France fut fondée à Paris, à l'instar de celle de Londres. Plus tard, comme son aînée, elle essaima en province. Si la Société Géologique de France peut se dire la fille de la Société Géologique de Londres, la Société Géologique du Nord en est la petite-fille.

Nous avons trouvé, dès notre naissance, chez notre aïeule, les sentiments dont sont animés les grands-parents envers leurs petits-enfants; Prestwich, Bigsby, Morris, nous ont témoigné, avec leurs encouragements, une bienveillance toute paternelle. Nous sommes heureux de retrouver les mêmes sentiments chez leurs successeurs et particulièrement chez l'illustre savant qui préside à cette réunion.

En cette solennité qui évoque tout le passé de la Société Géologique de Londres, nous aimons à lui exprimer notre admiration et notre reconnaissance pour les immenses services qu'elle a rendus et qu'elle rend encore à la Géologie.

Nous lui souhaitons un nouveau siècle de prospérité et de laborieuse fécondité.

JULES GOSSELET.

GERMAN EMPIRE.

Geheimrath FERDINAND ZIRKEL, D.Sc., Ph.D., For. Memb. R.S., Professor of Geology in the University of Leipzig, delivered the following speech:—

When Sir Archibald kindly desired me to say a few words in the name of my colleagues of the German Empire, I deeply appreciated the honour conferred upon me and gladly accepted the invitation, considering that, although not distinguished by the quality of an

official delegate or representative, I am at least, after Eduard Suess in Vienna and Albert Gaudry in Paris, the oldest Foreign Member living of the Society.

We are assembled to offer our thankful acknowledgment of the past meritorious history and to manifest the warmest interest in the continued progress of the oldest geological society in existence, which is so intimately connected with the development and advancement of our beloved science during the whole past century, the mother of and the model for all analogous societies over the globe.

The Society whose first Centenary we are celebrating has called forth a world-wide expression of appreciation for the extent and value of its work. There is no department of our multifarious science into which it has not carried light and impulse; field-investigation, stratigraphy, palæontology, petrography, experimental geology, physical and chemical geology, mining industry, terminology.

Indefatigable surveyors with keen powers of observation in the field; energetic pioneers in difficult regions, where strength of purpose and special training are indispensable to success; philosophers of genius, the creators of new ideas; fortunate inventors of fruitful methods; patient and learned labourers in the museums, laboratories, and with the microscope: all these illustrious men, amongst them a greater number of private individuals than elsewhere, have contributed with their important and suggestive papers to make the sixty-four thick volumes of the Society's Journal a real treasure and an unsurpassed stock of scientific knowledge.

Great Britain's Colonies and Great Britain's widespread interests and relations all over the earth, have given to these blue quarterlies a more international character than all publications that other similar societies can boast of.

So we, fellow-labourers of the German Empire, ask you kindly to accept our warm-hearted thankfulness and felicitation for all the work done, together with our cordial wishes for the uninterrupted prosperity of your great, famous, and useful institution, the glory of which will never cease to be the object of our sincere admiration and jealous emulation.

The Addresses presented were the following:—

THE ROYAL UNIVERSITY OF BONN.

DIE Rheinische Friedrich-Wilhelms-Universität, Bonn, darf unter allen deutschen Hochschulen am wenigsten fehlen, wenn die Londoner geologische Gesellschaft das Fest ihres hundertjährigen Bestehens feiert. Im Verein mit allen geologischen Lehr- und Forschungsanstalten der Welt blicken wir mit Anerkennung und Bewunderung auf die erfolgreiche Tätigkeit dieser ältesten geologischen Vereinigung, die für alle ähnlichen Bestrebungen vorbildlich gewesen ist. Wir gedenken aber dabei auch der besonderen Förderung, die in der ersten Hälfte des neunzehnten Jahrhunderts gerade unsere Landschaft durch die Mitglieder der

Londoner geologischen Gesellschaft erfahren hat. Zahlreiche englische Forscher, die wie alle irgendwie bedeutenden Geologen Grossbritanniens der Gesellschaft angehörten, haben durch die Erforschung der geologischen Verhältnisse des Niederrheins die Wissenschaft zu fördern gesucht, und sie haben zumeist auch die Ergebnisse ihrer Studien in den Schriften der Gesellschaft niedergelegt. Poulett Scrope erforschte die Vulkane, Hibbert die Vulkane und Braunkohlenbildungen, Horner die geologischen Verhältnisse der Umgegend von Bonn, Lyell und Belt den Löss. Einen sehr wesentlichen Fortschritt für das Niederrheingebiet bedeuteten aber die umfangreichen Studien von Sedgwick und Murchison über die älteren paläozoischen Bildungen der Rheinlande.

Wie das Forschungsgebiet der Geologie vielleicht in höherem Masse als das irgend einer anderen Wissenschaft sich nicht auf ein einzelnes Land beschränken kann, sondern sich auf den ganzen Erdkreis erstrecken muss, so hat auch die Londoner geologische Gesellschaft jederzeit in allen Erdteilen die Forschung gefördert. Dass sie diese vorbildliche Tätigkeit im zweiten Jahrhundert ihres Bestehens nicht minder erfolgreich ausüben möge als im ersten, auf das sie mit Stolz zurückblicken kann, das ist unser aufrichtiger Wunsch am heutigen Tage.

Bonn, den 26. September, 1907.

Der Rektor,
Graf.

THE ROYAL UNIVERSITY OF GÖTTINGEN.

Zu dem festlichen Tage an welchem die Geological Society of London ihr einhundertjähriges Bestehen feiert, entbieten ihr Prorektor und Senat der Königlichen Georg-August Universität zu Göttingen, nachdem es ihnen leider unmöglich gewesen ist, einen persönlichen Vertreter zu entsenden, ihre wärmsten Glückwünsche: in bewundernder Anerkennung der unschätzbaren Verdienste, welche die Gesellschaft sich um die Geologie im weitesten Sinne erworben hat. Hat sie doch lange Jahre hindurch ihre Ziele und Zwecke fast ohne Rivalen verfolgt und ist auch dann mit wachsendem Erfolg auf der gleichen Bahn vorangeschritten, als andere Gesellschaften zur Förderung und Vertiefung des Studiums der Geologie gegründet waren. So ist sie denn der Mittelpunkt für alle die illustren Gelehrten gewesen, welche für die Geologie Englands und anderer Länder wie für die Erforschung der centralen Probleme dieser Wissenschaft so wichtige und ausgezeichnete Werke geliefert haben. Sind doch die in der ganzen wissenschaftlichen Welt bekannten Namen wie William Buckland, William Fitton, A. Sedgwick, R. Murchison, Charles Lyell, De la Beche, Edward Forbes, Joseph Portlock, John Phillips, Andrew Ramsay, Thomas Huxley, Joseph Prestwich, Martin Duncan, Robert Etheridge, William Blanford und so zahlreiche andere—der Lebenden ganz zu

schweigen—in den Schriften der Gesellschaft zu finden: eine lange Kette von Männern, die dazu beigetragen haben, der Gesellschaft das hohe wissenschaftliche Ansehen und den weitreichenden Einfluss zu sichern, den sie nun schon seit Menschenaltern besitzt.

Die glänzende Vergangenheit und die kraftvolle Gegenwart der Gesellschaft lassen nur den schlichten Wunsch zu: möge die Geological Society of London wirken, gedeihen und zunehmen wie seither, möge sie sich allezeit rüstiger Forscher und erleuchteter Geister erfreuen, wie in dem glorreichen ersten Jahrhundert ihrer Wirksamkeit.

Göttingen, den 21. September, 1907.

W. WAMAR.

THE UNIVERSITY OF HALLE.

Quod bonum felix faustumque sit inclutæ Societati Geologicæ Londiniensi omnium Societatum Geologicarum antiquissimæ celeberrimæque quæ cum eo tempore condita esset quo acerrimo inter se certamine confligebant virorum doctorum opiniones de Neptuni et Volcani in formando diffingendoque terræ corpore partibus inde ab initio amplissimum saluberrimumque secuta est consilium suum esse arbitrata accurata observatione subtilique meditatione ad rerum veritatem sese penetrare et quicquid de terræ origine fatisque indagando sciri possit scrutari necnon harum quæstionum notitiam studisque apud omnes homines cultiores propagare et cum ipso vitæ usu operibus imprimis montanis et metallorum conciliare.

Crescente igitur mox sociorum frequentia tale incrementum cepit tantumque nacta est auctoritatis ut virorum eius præsidum e quibus Rodericum Impey Murchison, Carolum Lyell, Carolum Darwin, Thomam Henricum Huxley, e præstantibus multis præstantissimos commemorare iuvat nomina non huius tantum societatis sed ipsius scientiæ ad universam rerum naturam pertinentis ætates et progressus indicent.

Nec contenta patrium solum optimis studiis imbuisse per legatos in omnes orbis terrarum partes missos locupletissimam materiam Londinium convexit in eaque tractanda et scientiæ recludenda adeo non se continere solet intra suæ terræ fines ut omnium fere nationum viri docti his copiis libere utantur et vix quisquam inter eos sit quin operum suorum adiumenta felicia huic societati debeat.

Festa Natalicia Centesima diebus xxvi, xxvii, xxviii mensis Septembris anni mccccvii, sollemniter celebranda exanimi sententia gratulantur pro perpetua eius salute ac felicitate pia vota nuncupant fidem voluntatemque suam testantur.

Universitatis Fridericianæ Halensis cum Vitebergensi consociatæ Rector et Senatus,

LOOFD,
n. f. Rector.

THE GRAND DUCAL UNIVERSITY OF HEIDELBERG.

Das allgemeine Interesse für geologische Dinge, welches zu jeder Zeit in England bestand, findet einen deutlichen Ausdruck in der Tatsache, dass Sie die Hundertjährige Jubelfeier des Bestehens der Geological Society of London feiern können. Gegründet in den Kinderjahren der wissenschaftlichen Geologie hat die Gesellschaft allzeit gleichen Schritt gehalten mit dem Wachstum geologischer Erkenntnis und ist in manchen Phasen ihrer Entwicklung die Führerin und Pfadfinderin gewesen.

Indem wir in aufrichtiger Anteilnahme an Ihrer Festfreude unsere wärmsten Glückwünsche zu Ihrer Feier darbringen, erinnern wir uns, dass von England wie auf so manchen anderen Gebieten menschlichen Forschungsdranges auch auf dem der Geologie befruchtende Anregung für Deutschland ausging. Die grossen Namen James Hutton, Sir Roderick Impey Murchison und Sir Charles Lyell werden auch in der Geschichte der deutschen Geologie unsterblich fortleben und wir vergessen nicht, welche Verdienste um das Erbblühen der jüngsten Zweige geologischer Erkenntnis, der Gesteinslehre und der Tektonik des krystallinen Schiefergebirges, die Geological Society of London als Gesamtheit und insbesondere deren Mitglieder Sir Archibald Geikie und Henry Clifton Sorby sich erworben haben.

Wo immer das englische Volk auf dem Erdenrunde Fuss gefasst hat, ist es stets eine seiner ersten Kulturarbeiten gewesen, den geologischen Bestand und Aufbau seiner Niederlassungen zu erforschen. Dadurch ist das Quarterly Journal of the Geological Society of London zu einem wichtigen und unentbehrlichen Archiv für die Geschichte der Erde geworden.

Dankbar gedenken wir auch der innigen Beziehungen, welche es stets Ihr aufrichtiges Bemühen war, zwischen Ihrer Gesellschaft und der deutschen Geologie zu knüpfen und zu erhalten. Dürfte sich doch auch unser grosser Robert Wilhelm Bunsen mit Stolz Ihr auswärtiges Mitglied nennen.

Möge der glückliche Aufstieg der Geological Society of London in dem ersten Jahrhundert ihres Bestehens auch über viele weitere Jahrhunderte sich in immer gesteigertem Masse fortsetzen.

Im Namen und Auftrag der Ruprecht-Karls-Universität zu Heidelberg,

Der zt. Prorektor,

JELLINEK.

Heidelberg, den 15. September, 1907.

THE ROYAL PRUSSIAN ACADEMY OF SCIENCES.

Der Geological Society of London, der ältesten und grössten aller geologischen Gesellschaften, erlaubt sich die Königliche Akademie der Wissenschaften ihre aufrichtigsten Glückwünsche zur Feier des hundertjährigen Stiftungsfestes auszusprechen.

Zu einer Zeit, in welcher die Geologie als selbstständige Wissenschaft noch in bescheidenen Anfangsstadien lag, in welcher erst

vereinzelte Forscher an die hehre Aufgabe der Geologie-Paläontologie als einer Entwicklungsgeschichte der Erde und der Lebewelt heranzutreten wagten, hat bereits in England eine Anzahl von Männern zu diesem Zwecke sich verbündet. Erfüllt und durchdrungen von dem hohen, ihrem geistigen Auge vorschwebenden Ziele, durch gemeinsame Arbeit zu sicherer Erkenntnis dieser Entwicklungsgeschichte zu gelangen, haben jene Männer die Geological Society of London gegründet und so sich unvergängliche Verdienste um die Geologie und Paläontologie erworben.

Eine lange Reihe klangvoller, berühmter Geologen-Namen ist es, die wir in dem nun abgelaufenen Jahrhundert an der Spitze dieser Ihrer Gesellschaft verzeichnet finden. Kaum ein geologisches Problem des vergangenen Jahrhunderts gibt es, das nicht in den zahlreichen Schriften Ihrer Gesellschaft behandelt und gefördert worden wäre. Eine stattliche Anzahl geologischer Formationen und Systeme hat ihre erste Kenntnis und ihren Namen Mitgliedern Ihrer Gesellschaft zu verdanken. Bahnbrechende stratigraphische Arbeiten, und in Verbindung mit diesen die ersten und vorzüglichsten geologischen Übersichtskarten, sind in England durch Anregung Ihrer Gesellschaft geschaffen worden.

So darf die heutige Geological Society of London mit berechtigtem, hohem Stolz auf das zurückblicken, was sie im Laufe eines Jahrhunderts an Arbeit, an Anregung, an fördernder Erkenntnis in Geologie und Paläontologie geleistet hat.

Die Königlich Preussische Akademie der Wissenschaften aber, in dankbarer Anerkennung dieser Leistungen, erlaubt sich der Geological Society of London neben ihren Glückwünschen zu dem, was diese im vergangenen Jahrhundert geleistet hat, auch fernere Wünsche darzubringen für ein weiteres, gleich erfolgreiches Fortarbeiten.

W. WALDEYER.

A. ANWERS.

VAHSEN.

DIELS.

THE ROYAL SOCIETY OF SCIENCES OF GÖTTINGEN.

Der Geological Society of London bringen wir zu der Feier ihres einhundertjährigen Bestehens unsere wärmsten Glückwünsche dar, indem wir zugleich ihre ausserordentlichen Verdienste um die Förderung der Geologie rühmend anerkennen.

Zu einer Zeit, in welcher nur eben angefangen wurde, die Geologie von der Mineralogie als besondere Wissenschaft zu trennen, in der noch der Zoologe Blumenbach in Göttingen neben Physiologie und vergleichender Anatomie auch Ethnologie, Anthropologie, Paläontologie und Geologie vertrat, hat eine Reihe ausgezeichneten Männer in England durch die Gründung der Geological Society bahnbrechend gewirkt; sie hat eine Organisation, eine Centralstelle geschaffen, die fortan Alle sammelte, welche Interesse für

die Geologie hegten. Deren Zahl ist zu allen Zeiten gerade in England eine besonders grosse gewesen.

Darunter haben sich aber sehr viele ausgezeichnete Männer der Wissenschaft befunden, welche in den höchst werthvollen Schriften der Gesellschaft oder auch in besonderen, umfangreichen Werken die Grundlagen für die fortschreitende Ausgestaltung der Geologie geschaffen haben. Auf diese Arbeiten haben dann die späteren Geologen zurückgreifen können und werden sie auch künftighin immer wieder zurückgreifen müssen; auf sie haben auch die Geologen aller übrigen Länder sich stützen können, um ihre Wissenschaft für ihre eigene Heimath weiter auszubauen.

Auf die ganze Erde hat somit die Geological Society wesentlichen Einfluss ausgeübt und befruchtend und fördernd eingewirkt, und so ist es denn selbstverständlich, dass die von den englischen Geologen gewählten Namen und Bezeichnungen überall bekannt und zum Theil allein gebräuchlich sind, dass die in England gewonnenen Anschauungen und Theorien theils unbestritten massgebend sind, theils zu weiteren Forschungen angeregt und zur Klärung der Ansichten das Ihrige beigetragen haben.

Dass aber die Geological Society fernerhin die gleiche einflussreiche Wirksamkeit bethätigen möge, wünschen und hoffen wir im Interesse der Wissenschaft.

Die Königliche Gesellschaft der Wissenschaften zu Göttingen.

ERNST EHLERS,

d. Z. vorsitzender Sekretär.

Göttingen, im September 1907.

THE IMPERIAL LEOPOLDINE-CAROLINE ACADEMY, HALLE.

DIE Kaiserlich Leopoldinisch-Carolinisch Deutsche Akademie der Naturforscher begrüsst die Geologische Gesellschaft zu London an ihrem Jubelfeste auf das herzlichste. Hundert Jahre sind verflossen, seitdem die Geologische Gesellschaft durch eine Anzahl geistvoller und weitzblickender Männer gegründet worden ist. Sie hatten erkannt, dass dauernde Erfolge nur durch gemeinsame Arbeit erreicht werden können. Reich hat sich ihre Mühe gelohnt, denn die Geologische Gesellschaft hat nicht nur ständig an Mitgliederzahl und Ansehen zugenommen, sondern auch durch ihre inhaltsreichen Veröffentlichungen Zeugniß davon abgelegt, welche Fülle von Beobachtungen und Gedanken durch ihre Mitglieder zum Gemeingut der Wissenschaft geworden sind.

Möchte die Geologische Gesellschaft noch lange Zeit blühen, wachsen und gedeihen! Dies wünscht ihr von Herzen der Präsident der Kaiserlich Leopoldinisch-Carolinisch Deutschen Akademie der Naturforscher.

A. WANGERIN.

Halle a./S., den 26. September, 1907.

THE GERMAN GEOLOGICAL SOCIETY.

Der Geological Society of London bringt die Deutsche Geologische Gesellschaft in hoher Verehrung die herzlichsten Glückwünsche zu ihrem Jubiläum dar.

Der Tag, an dem die Geological Society of London auf ihre hundertjährige Wirksamkeit zurückblickt, ist ein Feiertag für die Geologen aller Länder. Denn mit bewundernder Anerkennung und froher Dankbarkeit muss die geologische Wissenschaft auf der ganzen Welt der ausserordentlichen Förderung gedenken, die sie durch die Geological Society of London erfahren hat. Die Geschichte der Geologie ist zu einem wesentlichen Theile die Geschichte dieser Gesellschaft. Kein Gebiet der Geologie, Petrographie und Paläontologie und kein Land auf der Erde gibt es, wo die Gesellschaft nicht die Keime der Wissenschaft ausgestreut und nicht in bahnbrechender Arbeit reiche Frucht geerntet hätte. Die lange Reihe der glänzenden Namen, die die Mitgliederlisten ihres ersten Jahrhunderts zieren, sichert ihr allein schon unsterbliches Andenken, und die ersten 75 Bände ihrer Zeitschrift, ein unvergängliches Denkmal, das sich die Gesellschaft errichtet hat, werden auch für die kommenden Forscher ein nie versiegender Born des Wissens und der schöpferischen Anregung sein.

Möge es der Geological Society of London beschieden sein, auch in aller Zukunft ihre hohe Bedeutung zu bewahren und stets so reiche Blüten zu entfalten wie bisher, möge sie in Kraft und nie geschmälertem Ruhme Jahrhunderte überdauern zum gesegneten Fortschritt der Wissenschaft und Menschheit, zum gerechten Stolz ihres Vaterlandes. Dazu Glück auf!

Berlin, im August 1907.

Der erste Vorsitzende:

BEYSCHLAG.

Der zweite Vorsitzende:

RAUFF.

Der Schriftführer:

EBERDT.

THE ROYAL ACADEMY OF MINES, FREIBERG.

ZUM 100-jährigen Jubiläum der ehrwürdigen Geological Society of London bringt die Königliche Bergakademie zu Freiberg in Sachsen die aufrichtigsten Glückwünsche dar. Mit Bewunderung und Dankbarkeit richten heute alle Hochschulen, denen die Pflege der geologischen Wissenschaft am Herzen liegt, den Blick auf die hehre Feier der Geologischen Gesellschaft zu London, die in den 100 Jahren ihres Bestehens eine ununterbrochene Kette von Fortschritten und hochwichtigen Entdeckungen in der Wissenschaft von der Erde verkörpert. In ihren Mitgliederlisten erglänzen in langer

Reihe die gefeierten Namen von Gelehrten, die in der ganzen Welt als geologische Entdecker und Lehrer genannt werden, von Adam Sedgwick, Sir Roderick Murchison, Charles Lyell, Charles Darwin und Henry Sorby bis auf die berühmten Mitglieder unserer Tage, die noch heute um die Weiterentwicklung unserer Wissenschaft bemüht sind und dem Ruhmeskranze der Gesellschaft täglich neue Blätter hinzufügen.

Die Freiburger Bergakademie glaubte durch langjährige und zahlreiche hinüber und herüber gespannte Bande mit den englischen Fellowhammerers verbunden zu sein. Begannen doch diese engen Beziehungen schon zur Zeit Abraham Gottlob Werners, unter dessen Schülern sich zahlreiche Engländer befanden, sodass sogar in diesem Lande eine Zeitlang neben der Geological Society eine Wernerian Society bestehen konnte. Seit jener entlegenen Zeit ist die Bedeutung der englischen Literatur für unsere Wissenschaft fortwährend gewachsen. Es zeigt sich dies uns sehr deutlich, wenn wir die stattlichen Bände des Quarterly Journals durchblättern, in denen kein Zweig der Geologie unberücksichtigt geblieben ist. Wenn es ohne weiteres aus der statistisch bekannten Zahl der auf dem Erdball mit Bergbau beschäftigten Menschen englischer Zunge nachweisbar ist, dass die Bezeichnung des englischen als Miner's Language eine gewisse Berechtigung hat, so darf die Geological Society weiterhin den Ruhm beanspruchen, Englisch zu der Sprache erhoben zu haben, deren Kenntnis für jeden Geologen eine unbedingte Notwendigkeit ist.

Als vor hundert Jahren die Gründer der Geological Society zusammentraten, bezweckten sie, durch gegenseitigen Zusammenschluss die geologischen Studien in Gross-Britannien zu fördern. Der grosse Ansporn für die wirksame Pflege jeder Wissenschaft, wie er aus der Anknüpfung persönlicher Beziehungen zwischen ihren Vertretern entspringt, liegt ja gerade auf dem Gebiete der Geologie besonders klar vor Augen. Hier kann oft nur direkte Anschauung im Felde unter persönlicher Führung eines erfahrenen Kenners der betreffenden Gegend ein völliges Eindringen in die vorliegenden Probleme ermöglichen. Die zahlreichen Exkursionen, welche mit der Jubelfeier verknüpft sind, kommen diesem Bedürfnis wiederum entgegen und sind besonders Ihren fremden Gästen willkommen. Diese haben mit Freuden die Gelegenheit benutzt, um einen Blick in das Land zu werfen, dessen erstmalige geologische Kartierung durch William Smith der Anlass war für die Entstehung der ersten geologischen Karte überhaupt. Mögen wir deutschen Geologen, die diesmal in grösserer Zahl Ihrer liebenswürdigen Einladung zu Ihrem seltenen Feste gefolgt sind, das Glück haben, künftig auch zahlreiche englische Fachgenossen in unseren heimatlichen Bergen führen zu dürfen!

Den Inhalt der gesamten Wünsche für eine weitere kraftvolle, für unsere Wissenschaft segensreiche Entwicklung der Geological Society of London fasst die Freiburger Königliche Bergakademie in ein Wort zusammen, das nicht nur allen Bergleuten, sondern auch

den meisten Geologen der ganzen Welt zum vertrauten Ruf in allen ernstesten Lebenslagen geworden ist, zu einem tief empfundenen Glückauf!

Rektor und Senat der Königlichen Bergakademie zu Freiberg.

i. V. ROCH.

Im September 1907.

THE GEOLOGICAL SURVEY OF SAXONY.

UNTER den internationalen Vertretern der geologischen Disciplinen, welche der Geological Society of London am heutigen Tage zur Begehung des hundertjährigen Jubiläums ihres Strebens und Erfolges beglückwünschen, will auch die Geologische Landesanstalt des Königreichs Sachsen nicht fehlen.

Sie ist sich in dem fünfunddreissigjährigen Zeitraume ihrer Tätigkeit auf das vielfachste des fördernden Einflusses bewusst geworden, den die Geological Society direkt oder indirekt durch ihre Errungenschaften auch auf die Erforschung Sachsens ausgeübt hat.

Diese Beeinflussung konnte nicht ausbleiben, umspannt doch die Arbeitssphäre der Geological Society of London seit nun bereits mehreren Menschenaltern den ganzen Erdkreis und die gesamten Gebiete der allgemeinen und historischen Geologie sowie der Paläontologie und haben doch ihre Mitglieder in jeder dieser Richtungen auf dem Wege eindringender Forschung, kritischer Vergleiche und abwägender Schlussfolgerung Resultate erzielt, die massgebend für die geologische Wissenschaft geworden sind.

Der Erkenntnis dieser Tatsache verleiht auch die Geologische Landesanstalt des Königreichs Sachsen Worte der aufrichtigsten Bewunderung und der dankbarsten Anerkennung. Dieselben vereinen sich mit den Gefühlen der Geologen aller Länder zu dem Wunsche: möge das heute beginnende neue Jahrhundert die Geological Society of London in altgewohntem Glanze erstrahlen lassen!

Die Geologische Landesanstalt des Königreichs Sachsen.

Dr. HERMANN CHEDNER.

Leipzig, den 26. September, 1907.

GREECE.

Professor THEODOROS G. SKOUPHOS, Delegate of the National University of Greece, Athens, addressed a few words to the Meeting.

HOLLAND.

Professor ARTHUR WICHMANN, of the University of Utrecht, spoke on behalf of Holland, and the following Addresses were presented:—

THE UNIVERSITY OF UTRECHT.

Sodalibus Eruditissimis multisque in scientias meritis Clarissimis
Societatis Geologicæ Londinensis, S. P. D. Senatus Academiæ
Ultraiectinæ.

Quod centesimum natalem Societatis Vestræ iam iam celebraturi estis, cum ceteros omnes scientiarum amantes tum nos, Academiæ Ultraiectinæ professores permagno iustoque affecit gaudio. Grato enim animo recordamur, quot studiis egregiis de geologia tam patriæ nostræ quam coloniarum eius transmarinis, quæ in India Orientali atque Occidentali sitæ sunt, optime sitis meriti.

Ad tanta merita hoc tempore sollemni tacere non potuimus neque committere, quominus Vobis et nostro et scientiæ nomine gratias ageremus quam maximas.

Gratulationem nostram quamquam C. E. A. Wichmann, collega idemque legatus noster, Vobis præsentibus præsens testificari iussus est, per has litteras ultro nostram erga Vos observantiam significare cupiebamus, ut perpetuum debitumque Vestris meritis ac muneribus honorem tribueremus.

Valete, Viri Optimi, Vobisque ita persuadete, nos nil magis optare quam ut diu porro, et nos et omnes scientiarum studiosi Vestra luce fruantur.

S. D. VAN VEEN, Rector Magnificus.

F. A. F. C. WENT, l. Senatus Actuarius.

Dabamus Traiecti ad Rhenum, Idibus Septembribus, A.S. MCMVII.

THE ROYAL ACADEMY OF SCIENCES OF AMSTERDAM.

De Koninklijke Akademie van Wetenschappen te Amsterdam zendt aan de Geological Society of London hare hartelijke gelukwensen bij de heuchelijke gebeurtenis van haar honderdjarig bestaan.

De Geological Society of London, de oudste van alle geologische genootschappen, heeft thans gedurende een eeuw in de voorste geleerden gestaan van de breede schare van beoefenaars der geologie. Haar publicaties, die van het jaar 1811 tot op heden onafgebroken verschenen, leggen er getuigenis van af, hoe de leden der Society er veel toe hebben bijgedragen de geologische wetenschap te maken tot wat zij thans is. De Geological Society of London heeft daardoor aanspraak gekregen op de bewondering en de dankbaarheid van de geheele beschafde wereld.

Door dit adres brengt de Koninklijke Akademie van Wetenschappen te Amsterdam hulde aan de 'Geological Society of London' en knoopt aan die hulde den wensch vast, dat de toekomst voor haar even roemvol zal zijn als haar verleden.

D. V. KORTEWEG, Loco-Voorzitter.
J. D. VAN DER WAALS, Secretaris.

Amsterdam, 26. September, 1907.

ITALY.

In the absence of Professor GIUSEPPE DE LORENZO, Delegate of the Ministry of Public Instruction, who was detained in Italy by the effects of an accident, Professor T. McKENNY HUGHES, M.A., F.R.S., F.S.A., Delegate of the Geological Society of Italy, spoke on behalf of Italy as follows:—

I am very proud to stand forth at the request of the President of the Geological Society of Italy, of which I am one of the earliest members, to convey hearty congratulations to the Geological Society of London on the occasion of its first Centenary.

Though the Society which speaks for Italy is not very old, it represents a land that has for centuries ruled or led the world—a land of brilliant initiative and vigorous executive—the land which has given to our Science Leonardo da Vinci, and Frascatoro, and Steno, and many a good man happily still among the living and drawing to him our admiration and affectionate regard.

Well may Italy with the proud knowledge of her glorious past offer encouragement to her English fellow-workers, and well may England gratefully accept this additional favour from Italy to whom she already owes so much.

I have the honour of laying before you the congratulations of the Geological Society of Italy.

JAPAN.

Professor F. OMORI read and presented the following Address from the Imperial University of Tokyo.

THE COLLEGE OF SCIENCE, IMPERIAL UNIVERSITY OF TOKYO.

THE College of Science of the Imperial University of Tokyo desires to offer its cordial congratulations to the Geological Society of London on the occasion of the celebration of its Centenary, and to take this opportunity of expressing its deep sense of gratitude and great admiration for the brilliant work which the Society has done for the advancement of Geological Science.

Started in the infancy of Geology, the Geological Society of

London is not only the oldest of geological societies, but has also been most intimately connected with the immense progress which the science has made during the past century. Indeed, its Quarterly Journal is a record of this great progress, and some of its past members—such, among others, as Sedgwick, Murchison, and Lyell—have imprinted imperishable names in the history of the science.

The College of Science of the Imperial University of Tokyo wishes that the Geological Society of London may for ever prosper, and that its next hundred years may prove still more brilliant than those which have just been completed.

JOJI SAKURAI, Acting Director.

June 24th, 1907.

MEXICO.

Dr. JOSÉ G. AGUILERA, Director of the Geological Survey of Mexico, and Delegate for the Survey and for the 'Antonio Alzate' Scientific Society, spoke in Spanish on behalf of his country.

NORWAY.

Professor WALDEMAR CHRISTOFER BRÖGGER, Sc.D., LL.D., Rector of the University of Christiania, spoke on behalf of Norway, and the following Addresses were presented:—

THE ROYAL UNIVERSITY OF NORWAY, CHRISTIANIA.

THE Royal University of Norway begs to tender its congratulations and thanks to the oldest and most renowned Geological Society, on the occasion of its Centenary.

During the century that has elapsed since its foundation, the Geological Society of London has, by its activity, furnished excellent groundwork for the study of geology in all its branches, and has done more to develop this science than any other institution in the world.

The Society has had the good fortune to reckon among its members a great number of workers whose names are closely connected with fundamental ideas of vast importance for the elucidation of the history of our earth, and for the evolution of the whole organic world, mankind included.

By extensive labours, your Society has, to a greater degree than any other institution, succeeded in awakening a general interest in

the natural sciences and in diffusing a due appreciation of their importance.

Geological research in Norway has, both directly and indirectly, received many essential impulses from England, and the University of Norway has special cause to send hearty greetings to the Geological Society of London.

The University of Norway therefore begs respectfully to express its gratitude for the weighty contributions which your Society has yielded to the common work of culture during a period of one hundred years, and at the same time to express the wish that the Society, for centuries to come, may continue to disseminate light and truth.

Christiania, September 1907.

W. C. BRÖGGER,
Rector of the University,
Dean of the Faculty of Science.

LYDER BRUN,
Dean of the Faculty
of Theology.

A. TARANGER,
Dean of the Faculty
of Law.

C. BOECK,
Dean of the Faculty
of Medicine.

HJALMAR FALK,
Dean of the Faculty
of Arts.

ORLAND,
Secretary of the University.

THE MUSEUM OF BERGEN.

BERGENS Museum sends cordial greetings and good wishes to the distinguished Society on the auspicious occasion of the 100th anniversary of its foundation. Many words are not needed to express our feelings of admiration of what has been done by the Society during the past hundred years. Its brilliant position is well known all over the scientific world. We only beg leave to express this wish: May the Geological Society of London long continue to maintain and propagate the glorious traditions, of which any scientific society might be proud.

Bergen, September 6th, 1907.

G. A. HANSEN,
Præses.

B. E. BENDIXEN,
Vicepræses.

K. BREKKE.

JOHAN BÜGH.

HERM. FRIELE, B.S.

KLAUS HANSSEN.

ANDOR HOEL.

JOHAN HJORT.

J. C. ISDAHL.

JOHAN LOTHE.

GERHARD SUNDT.

C. F. KOLDERUP.

PORTUGAL.

Professor WENCESLAU DE SOUZA PEREIRA LIMA, of the Geological Survey of Portugal, was unfortunately prevented from attending at the last moment by important business.

RUSSIAN EMPIRE.

Dr. THEODOSIUS TSCHERNYSCHEW, of the University of Moscow, delivered the following Address:—

MESSIEURS,

Au nom des géologues russes et de nos confrères, les géologues finlandais, j'ai l'honneur d'adresser à la Société Géologique de Londres, qui célèbre aujourd'hui le Centenaire de sa fondation, nos plus sincères et cordiales félicitations. C'est avec un plaisir profondément ressenti que les géologues de la Russie se rappellent le lien qui les rattache intimement aux géologues de l'Empire britannique, lien créé surtout par l'un des illustres présidents de la Société, Sir Roderick Impey Murchison, qui, en collaboration avec de Verneuil et Keyserling, donna le tracé de la première carte géologique de la Russie d'Europe.

Puisse ce lien fraternel s'affermir toujours et se perpétuer dans le second siècle d'existence de la Société Géologique de Londres, et puissent les travaux incessants de ses membres apporter encore de nouvelles lumières dans l'éclaircissement des problèmes géologiques du globe et ajouter des pages immortelles à l'histoire de la Science, pour le bien de l'Humanité et pour la gloire du peuple anglais.

The following Addresses were then presented:—

THE IMPERIAL UNIVERSITY OF ST. PETERSBURG.

THE Imperial University of St. Petersburg sends greeting to the oldest geological learned Society in the world on the occasion of the festive celebration of the glorious jubilee of its hundredth anniversary.

First in origin, first in its services to science, first in respect of the number of prominent thinkers in the field of geology among its members—the Geological Society of London occupies the most honourable position among all learned societies and institutions whose aim is the study of the Earth's history.

During a whole century it has led the van in the continued development of geological thought, and on the pages of its publications may be traced all the evolution that geology has gone through in the course of the last century. It may therefore be said that the history of the Geological Society of London is, to a considerable

degree, also the history of the whole of geology throughout that period of time.

May it continue to flourish for many ages to come,³ for the good of science, for the glory of England, and for the enlightenment of humanity!

Dr. I. BORGMANN, Rector.

D. GRIMM.

W. SHUKOWSKI, Dean.

F. L. ZIELINSKI.

V. TCHIMKEWITSCH.

THE IMPERIAL UNIVERSITY OF MOSCOW.

THE Imperial University of Moscow presents to the illustrious Geological Society of London its most heartfelt congratulations on the auspicious occasion of the completion of its first centenary—the commemoration of its hundredth birthday.

Born at the time of the theoretical strife of ideas between the Plutonists and Neptunists, the Geological Society of London once and for all laid the solid basis of geology as a science; that is why the great day which is celebrated in London at the present moment is a feast-day all over the world wherever geology is cultivated and studied, and in every place where people take any interest in the history of our globe or its former inhabitants.

How many high-sounding names we have among the founders and the scientific workers of the London Geological Society! Let us begin with Greenough, MacCulloch, Wollaston, Fitton, Conybeare, Buckland, Parkinson, Sedgwick, Murchison, Lyell, and continue with the names of their numerous followers who have walked so worthily along the road that these great pioneers had trodden, and who have attained such world-wide reputation and glory at the present time.

One of these names is especially revered and looked up to in the history of Russian geology; it is that of Sir Roderick Impey Murchison, the famous explorer and investigator of the greater part of Russia. The Geological Society of London elected him to be its President immediately before his start for Russia, and in doing so testified to the fact that the geological exploration of that country was a most especial matter of interest for it. And it must be noted that from this moment the further progress of Russian geology has been closely connected with the history of the glorious activity of the Geological Society of London.

Besides the illustrious name of Sir Roderick Murchison, Russian geology gratefully honours the names of many other members of the London Geological Society, among which the Moscow University can by no means pass over in silence the name of William Strangways, who made a study of the geology of the country round St. Petersburg and of a large part of the Volga basin, and who, as far back as 1824, gave an outline of the geology of Russia.

Together with its sincere admiration for the glorious work

which the London Geological Society has already accomplished in the past century, the Moscow University begs to offer its best wishes for a happy future : May this Society long and successfully continue its fruitful and lasting work for the glory of science and the prosperity of mankind.

A. MANUILOFF,

Rector of the Imperial University of Moscow.

C. ANSLOGEV,

A. NIKITSKY,

Count L. KAMAROVSKY,

D. ZERNOFF,

} Heads of Faculties.

Moscow, May 16th, 1907.

THE IMPERIAL UNIVERSITY OF JURIEW (DORPAT).

L'UNIVERSITÉ Impériale de Jouriew (ci-devant Dorpat) a l'honneur de présenter ses félicitations à la Société Géologique de Londres, à l'occasion du centenaire de sa glorieuse activité scientifique si bien connue du monde civilisé.

Il est certain que, parmi les sciences exactes, la géologie a toujours été la branche favorite du peuple anglais, car c'est en elle que se reflète de la manière la plus complète son esprit si logique et si précis, mais en même temps si plein de poésie. Il suffit de rappeler que le célèbre fondateur de la géologie historique William Smith fut un Anglais et que le grand Charles Lyell ainsi que Sir Roderick I. Murchison auquel non seulement l'Angleterre, mais aussi la Russie, sont redevables de travaux distingués sur la structure géologique de ces pays, pensaient et écrivaient en anglais.

Le jour de la fondation de la Société Géologique de Londres restera à jamais mémorable dans l'histoire de la géologie.

Ce jour marque, en vérité, le commencement d'une ère nouvelle. Les fondateurs de la Société Géologique de Londres, mettant fin aux interminables controverses entre volcanistes et neptunistes, décidèrent de se livrer à une consciencieuse et patiente étude des faits, et de ne procéder à la construction de l'édifice de la science exacte qu'après en avoir contrôlé et vérifié tous les matériaux.

La voie nouvelle était ardue, mais la Société Géologique de Londres s'y engagea hardiment et par son exemple entraîna les savants des autres pays. Cent ans se sont écoulés, et nous sommes en présence de résultats grandioses : un nombre incalculable d'observations ont été faites dans tous les pays de l'univers, et les fondements d'une science nouvelle, aussi exacte que la botanique et la zoologie, se trouvent posés.

Il n'y a pas lieu de rappeler ici les noms des célèbres savants, dont s'honore l'Angleterre et la Société Géologique de Londres. Les membres de cette dernière ont pu prouver qu'ils ne se bornent pas seulement à rassembler des faits et à faire de consciencieuses observations, mais qu'ils se laissent guider par un but autrement élevé—de synthétiser les connaissances acquises et d'en faire jaillir les

idées directrices. En priant la Société Géologique de Londres d'agréer ses félicitations, l'Université Impériale de Jouriéw (ci-devant Dorpat) forme les vœux les plus sincères pour que l'activité de cette ancienne et illustre compagnie continue à être aussi glorieuse et féconde en résultats que par le passé, et pour que le flambeau de la science géologique ne cesse d'être entre ses mains une source de lumière pour le monde civilisé.

E. PASSET, Recteur.

A. BOSOWNER, Secrétaire du Conseil.

THE IMPERIAL ACADEMY OF SCIENCES, ST. PETERSBURG.

L'Académie Impériale des Sciences adresse ses chaleureuses et cordiales félicitations à la Société Géologique de Londres à l'occasion du centenaire de sa fondation. Elle se souvient avec reconnaissance des noms de Sedgwick, Portlock, Murchison, Lyell, De la Beche, Phillips et de tant d'autres membres de la Société qui ont eu une si puissante influence sur le développement des sciences géologiques dans tous les pays. Les précieuses éditions de la Société Géologique—'Quarterly Journal' et 'Transactions'—resteront à jamais un monument superbe de son activité séculaire. L'Académie des Sciences est profondément persuadée que dans le second siècle de son existence la Société Géologique de Londres ajoutera à l'histoire des sciences géologiques de nouvelles pages immortelles pour le bien de l'Humanité et la gloire du peuple anglais.

CONSTANTIN, GRAND-DUC DE RUSSIE,
Le Secrétaire Perpétuel, SERGE D'OLDENBURG.

THE IMPERIAL MINERALOGICAL SOCIETY OF ST. PETERSBURG.

La Société Impériale Minéralogique de St. Pétersbourg envoie ses plus chaleureuses et cordiales félicitations à la Geological Society of London à l'occasion du centenaire de sa fondation. Cultivant depuis plus de 90 ans les sciences géologiques en Russie, elle est heureuse de constater l'intime lien qui unit depuis tant d'années les deux Sociétés par les intérêts scientifiques et les illustres savants Sedgwick, Sorby, Lyell, Murchison, Davidson, Miller, que toutes les deux ont eu l'honneur de compter parmi leurs membres.

Le Directeur : A. KARPINSKY.

Le Secrétaire : TH. TSCHERNYSCHEW.

THE IMPERIAL SOCIETY OF NATURALISTS OF MOSCOW.

C'est avec un vif sentiment d'admiration que la Société Impériale des Naturalistes de Moscou s'associe à la célébration du centième Anniversaire de la fondation de la Société Géologique de Londres et lui présente ses chaleureuses félicitations.

Il est inutile de rappeler ici les noms vénérés qui illustrent les

Annales de la brillante et féconde activité de la Société Géologique de Londres. Ces noms ont acquis une célébrité universelle, et parmi eux, il y en a d'inoubliables dans l'histoire du progrès scientifique que l'humanité a vu s'accomplir au XIX^{ème} siècle.

Les excellentes publications de la Société Géologique de Londres, 'Transactions' et 'Quarterly Journal,' offrent à tous les pays du monde une source de connaissances géologiques infiniment précieuses.

De toutes les contrées dans lesquelles les membres de la Société Géologique de Londres ont fait pénétrer leurs lumières, la Russie a été peut-être la plus favorisée. Déjà en 1824, William Strangways, vice-président de la Société, réussit à lever l'esquisse géologique de ce vaste pays; plus tard, ce fut son illustre président, Sir Roderick Impey Murchison, qui en fit l'étude systématique et en traça la carte géologique.

La Société Impériale des Naturalistes de Moscou, qui a commencé ses travaux presque en même temps que la Société de Londres, se fait aujourd'hui un honneur et un plaisir particulier de rappeler à la Société sœur ses grands mérites scientifiques et de lui exprimer ici sa gratitude et sa profonde sympathie.

Prof. N. OUMOFF, LL.D., Président.

Prof. Dr. A. SABANEJEFF, Vice-Président.

Prof. Dr. E. LEYST, Secrétaire.

Moscou, le 25 Avril, 1907.

THE GEOLOGICAL SURVEY OF RUSSIA.

Le Comité Géologique de Russie, unissant ses félicitations cordiales à toutes celles que la Société Géologique de Londres a déjà reçues à l'occasion du centenaire de sa brillante activité au service de la science et du progrès, se fait un devoir de rappeler que dans la Société Géologique de Londres a pris naissance le Geological Survey of the United Kingdom, la première en Europe des Institutions Géologiques d'État et le prototype des Établissements similaires fondés plus tard dans les autres pays. C'est avec un plaisir profondément senti que le Comité Géologique se souvient de l'intime lien rattachant les géologues britanniques et russes, lien surtout créé par un des illustres présidents de la Société, Sir Roderick Impey Murchison qui, avec de Verneuil et Keyserling, a établi le canevas fondamental de la structure géologique de la Russie d'Europe et en a tracé la première carte. Puisse l'union fraternelle des géologues de nos deux nations se prolonger durant le second siècle d'existence de la Société Géologique de Londres, et puissent les travaux de ses membres continuer à être, loin au delà de l'Empire Britannique, une source intarissable de science et de lumière dans l'éclaircissement et la résolution des problèmes les plus intéressants et les plus compliqués de la géologie du globe terrestre!

Le Directeur du Comité: ТН. ТШЕРНЫШЕВ.

Le Secrétaire: N. ПОГРЕБОВ.

FINLAND.

THE GEOLOGICAL SURVEY OF FINLAND.

ON the 100th Anniversary of the Geological Society of London, the geologists of Finland, and especially its Geological Commission, permit themselves to express to the Society their respectful and most cordial congratulations.

The Geological Society was born in the Primordial time of scientific geology. Its founders included many of the founders of Geology, and your Society has ever since counted among its members great masters of Natural Science, who have, one after the other, in what may be called an apostolic succession, delivered to us the high doctrines by which, from the beginning, British geology has been guided, and all truly scientific geological research will continue to be guided for ever.

The British doctrine of Actualism alone teaches us how to read the Book, whose pages are the sedimentary strata of the earth. It alone gives us, so we think, the clue to the understanding even of the oldest pre-Cambrian rocks occurring in our own country.

The theory of Evolution, with the origin of which the great name of Charles Darwin is so closely associated, belongs to the Credo of every modern naturalist.

The English stratigraphers, beginning from William Smith, have made their country the classical ground of geology, and its Geological Record a Canon for all other countries.

A Guardian of these grand traditions, having witnessed for the past hundred years the victorious development of geological science, promoted by its arduous labours, with the greatest empire of the earth as its field of research, the Geological Society of London will, we trust, have a future as glorious as its past, and continue to give us guidance to an enlarged and deepened knowledge.

J. J. SEDERHOLM, Director.
BENJ. FROSTERUS.

SWEDEN.

Professor ALFRED GABRIEL NATHORST, Sc.D., Ph.D., Keeper of the Department of Fossil Plants in the State Museum of Sweden, spoke on behalf of Sweden, and the following Addresses were presented:—

THE ROYAL UNIVERSITY OF UPSALA.

THE Geological Society of London, when celebrating to-day its first centenary, can look back proudly on such a vast amount of important and successful work performed in the interests of

scientific geology as has placed the Society in the very foremost rank among sister societies.

The steady advance of geological research, which has been going on since the time when the Society was founded and to a great extent through its instrumentality, has been faithfully reflected in the publications of the Society. In the long series of the Society's Presidents, from Greenough to Geikie, we find the names of a great many eminent investigators and authors, who have, in the course of the last hundred years, most essentially contributed to the progress of geological science in its different departments.

The University of Upsala, on this solemn occasion, begs to present to the Geological Society of London its warm and sincere congratulations, being fully assured that the achievements of the Society will be as brilliant and useful in the future as they have been in the past.

HENRIK SCHÜCK,
Rector of the University.

THE ROYAL SWEDISH ACADEMY OF SCIENCES.

THE Royal Swedish Academy of Sciences, whose first Præses, Carl Linnæus, had the most lively interest in geological and palæontological questions, and, long before Werner, gave expression to the thought of a uniform succession of strata all over the earth, sends hearty congratulations to the Geological Society of London on the occasion of its Centenary Jubilee.

The Academy wishes by this tribute to give expression to its thankfulness for the Society's comprehensive, powerful, and fruitful work for the development of geology and closely related sciences—a work which cannot be valued too highly, and whose results bear witness to the fact that the world's oldest geological society is also the most prominent one.

May the same living and powerful spirit, which has been active during the past century, characterise the work of the Society in the future, for the continual development and benefit of the geological sciences.

K. A. H. MÖRNER, President.
CHR. AURIVILLIUS, Secretary.

THE GEOLOGICAL SURVEY OF SWEDEN.

ON the occasion of the Centenary of the Geological Society of London, the members of Sveriges Geologiska Undersökning desire to express their gratitude to the Society for its zeal in furthering the progress of geological science during the past hundred years.

When the Swedish Geological Survey was instituted in 1858, the Geological Society of London had already been in existence

for half a century, and some of its members, such as Lyell and Murchison, had, on their visits to Sweden, given us valuable contributions to our knowledge of the geology of this country.

In remembrance of the main principles for geological exploration, which we owe to British scientists, and in the hope that the cordial relations that have existed hitherto between us may continue, our Survey wishes you every prosperity and success in the years to come.

J. GUNNAR ANDERSSON,
Director of the Geological Survey of Sweden.

SWITZERLAND.

Professor ARMIN BALTZER, Ph.D., of the University of Berne, spoke in German on behalf of Switzerland, and presented an Address from the Swiss Geological Survey and the Swiss Geological Society.

THE SWISS GEOLOGICAL SURVEY AND THE SWISS GEOLOGICAL SOCIETY.

UNSERE geologische Gesellschaft hat in ihrer Sitzung vom 30. Juli, in der sie auf eine 25jährige Wirksamkeit zurückschauen durfte, beschlossen, der Londoner Schwestergesellschaft durch ihren derzeitigen Präsidenten ihre herzlichsten Glückwünsche zu ihrem hundertjährigen Jubiläum darzubringen.

Mit ihr vereinigt sich in gleicher Gesinnung die schweizerische geologische Kommission.

Ruhmreich ist die Geschichte Ihrer Gesellschaft und eng verknüpft mit den Fortschritten der geologischen Wissenschaft; eine beredte Sprache spricht die lange Bändereihe Ihres 'Quarterly Journal.' Wie oft verkünden wir von unseren Kathedern die grundlegenden Resultate englischer geologischer Forschung, besonders auf stratigraphischem und paläontologischem Gebiet!

Mannigfach waren von jeher unsere Beziehungen: englische Pioniere haben in den letzten Jahrhunderten einzelne Teile unserer Gebirgswelt touristisch aufgeschlossen; englische Geologen haben von jeher unsere Alpen besucht, um das grösste Kettengebirge Europas kennen zu lernen. Von den älteren sei nur hingewiesen auf J. Tyndall und J. D. Forbes, welche unsere Gletscher erfolgreich studierten, ferner auf A. Sedgwick und besonders R. I. Murchison. Letzterer unternahm 1847 und 1848 mit Escher v. d. Linth, Bernhard Studer und Brunner gemeinsame Reisen in's Berner-Oberland, an den Pilatus, Säntis, Wallensee,

deren Resultate in der 1850 erschienenen von Leonhard bearbeiteten Schrift: 'Über den Gebirgsbau in den Alpen, Apenninen und Karpathen,' niedergelegt sind.

Vielfach wurden auch in neuerer Zeit freundschaftliche Beziehungen angeknüpft, englische Gelehrte besuchten unsere Jahresfeste, Geologen beider Länder fanden gegenseitig Anerkennung und Auszeichnung.

So begrüßen wir Sie denn aufs wärmste bei diesem Anlass und wünschen Ihnen eine glorreiche Weiterentwicklung: Vivat, crescat, floreat die 'Geological Society of London'!

Im Namen der Schweizerischen Geologischen Gesellschaft und der Schweizerischen Geologischen Kommission,

A. BALTZER, Präsident
der Schweiz. Geologischen Gesellschaft.

A. HEIM, Präsident
der Schweiz. Geologischen Kommission.

Bern und Zürich,
den 1. September, 1907.

THE UNITED STATES OF AMERICA.

Dr. ARNOLD HAGUE, of the Geological Survey of the United States, spoke as follows:—

Mr. President,

In presenting to your Society on this occasion of its Centenary Celebration the felicitations of the Institutions and Academies which I have the honour to represent, I desire to express the obligations of all of them to the mother of all Geological Societies throughout the world. To-day there are many vigorous children of a wise parent.

The National Academy of Sciences, which includes many branches of learning, carries on its rolls the names of eminent geologists: the Smithsonian Institution, founded by James Smithson, an Englishman, has devoted much time to the diffusion of geological knowledge, wherever and by whomsoever acquired: the United States Geological Survey is doing zealous service for its own Government, but is ever mindful of what it owes to the geologists of Great Britain: it desires to take this opportunity of expressing its indebtedness to the founders of the science in this Country.

My associates from the United States, delegates from our leading Universities, from active State Geological Surveys, from institutions of broad learning, from Academies of Natural Sciences, situated in widely separated localities of the country, unite in one harmonious expression of congratulation upon the completion of the Centenary of the Geological Society of London, and trust that its influence

upon the development of geological science in the next one hundred years may equal its service in the past.

The following Addresses were then presented:—

YALE UNIVERSITY.

ON behalf of the authorities of Yale University, I send you a hearty greeting on the occasion of the celebration of your One Hundredth Anniversary. Yale University long hoped that it would be able to send one of its Professors of Geology to attend this Conference, but varied duties in this country have made it impossible.

We recognise the Geological Society of London as a venerable institution of scientific learning which has done much to promote the science of Geology. The names of Darwin, Hutton, Huxley, Lyell, Murchison, Sedgwick, and Ramsay are among former members to whom geologists in this country look with special gratitude. Yale University was a pioneer in America in the matter of geological instruction, and calls to mind with pride the names of Benjamin Silliman, James Dwight Dana, Charles Emerson Beecher, Othniel C. Marsh, and Samuel Lewis Penfield, as Professors of Geology, Paleontology, and Mineralogy, whose services represent a precious heritage to the University, and whose work could not have been so successful had it not been for the labours of their English colleagues. Our American geologists feel under special gratitude to the members of your Society, who, at various times in the past when the science of Geology tended to move into false roads through the work of pure logicians, brought it back to its sure foundations through their careful observations and studies.

The authorities of Yale University extend to the Society sincere congratulations on the work of the past century, and express the earnest hope and belief that its future work will continue the high standards of the last three generations.

New Haven, Conn., July 27th, 1907.

ANSON PHELPS STOKES, Jun.,
Secretary.

JOHNS HOPKINS UNIVERSITY.

THE Johns Hopkins University sends most cordial greetings to the Geological Society of London on the occasion of the Hundredth Anniversary of its foundation.

It recognises the great influence which the Society has exerted on the development of Geology and the important contributions which its Members have made in this field of scientific research.

Professor William Bullock Clark has been designated as the Official Representative of the University, and will in person present this Memorial.

IRA REMSEN, President.

CORNELL UNIVERSITY.

CORNELL University extends to the Geological Society of London cordial greetings and hearty congratulations upon this, the Centenary of its foundation. Oldest of Geological Societies, its influence upon the development of geological study throughout the world has been most profound and far-reaching. The United States, particularly, is indebted to the Geological Society of London; for not only was it from the mother country that the most fundamental principles of geology were derived, but some of the early Fellows of the Society took an active part in establishing the very foundations of American geology, which is now so firmly established that the science to-day finds an honoured place in all our leading Universities. The epoch-making work of the early Fellows of the Society, no less than the publications of the present members—of which those of the eminent President of the Society, Dr. Geikie, are a conspicuous example,—form an essential part of the geological instruction in these Universities. Thus Cornell, as one of the American Universities, desires to express its profound gratitude to the Geological Society of London, and to join with other learned bodies of all the world in wishing for it a long life and other centuries of usefulness equal to that whose close is now being celebrated. It is a gratification to Cornell University that it is able to be represented at the Centenary Celebration of the Geological Society of London by one of its teachers of Geological Science, Professor Ralph S. Tarr, Professor of Physical Geography, who attends the Centenary as our delegate.

J. G. SCHURMAN, President.

Cornell University, September 1907.

THE UNIVERSITY OF THE STATE OF NEW YORK.

THE University of the State of New York sends greeting to the Geological Society of London on the centennial of its foundation, cordially recognising the high service it has rendered to scientific inquiry during the period of its existence. The devotion of its membership, the illustrious achievements of those who have directed its councils, the range and desert of its investigations and discoveries, and the authority of its addresses and publications are of world-wide esteem, but the stimulus which it, as a pioneer, has given to the spirit of research upon two continents constrains especial acknowledgement from scientific associations and from none more than from the body which hereby extends its felicitations upon this occasion.

It was largely through such inspiration that the State of New York, seventy-one years ago, ordained its geological survey and entrusted its prosecution to the University of the State. The State has, by successive enactments, broadened the scope of its work by

embracing cognate sciences therein, but its chief concern has been with its geological features under the supervision indicated. Results are witnessed in the great museum it has established, at the Capitol, and in the recorded observations and conclusions of the eminent scientists it has enlisted in its service. The University has maintained intimate relations with your Society through visitation and the exchange of publications, and through your courtesy by the incorporation in your membership of its representatives, chief of whom is that distinguished scientist, the late James Hall, LL.D., its curator for fifty years. Its present director of science and the State museum, John M. Clarke, Ph.D., LL.D., has more recently been honoured by an election to your body and will be privileged to attend your anniversary exercises as our delegate and representative.

Given under the hands of the Chancellor and the Commissioner of Education and the seal of the University of the State of New York, at Albany this tenth day of September nineteen hundred and seven,

WHELAN REID, Chancellor.

A. V. DRAPER, Commissioner of Education.

THE NATIONAL ACADEMY OF SCIENCES, WASHINGTON, D.C.

THE National Academy of Sciences gives greeting to the Geological Society of London on its Centenary. The National Academy of Sciences is an aggregation of all the Sciences. In it Geology is honoured by its distinguished foreign membership, as well as by its leaders in America. None appreciate more highly than the latter, the great service done in their Science by your Society, which has sustained for so many years an honourable career.

ARNOLD HAGUE, Secretary.

THE BOSTON SOCIETY OF NATURAL HISTORY.

THE Boston Society of Natural History through its official representative, Professor William Morris Davis, offers to the Geological Society of London the most sincere congratulations and earnest good wishes for the future.

The Geological Society has a long and honored past, and holds a distinguished place among the foremost scientific institutions of the world. The Boston Society of Natural History hopes that the future of its sister Society will fulfil the present promise and equal its own past, for we believe that the fulfilment of this hope will satisfy the highest scientific ambition.

CHARLES SEDGWICK MINOT, President.

Boston, Massachusetts, May 18th, 1907.

THE CALIFORNIA ACADEMY OF SCIENCES.

THE California Academy of Sciences in accrediting the bearer, Dr. Marsden Manson, C.E., as a delegate to the centenary of your old and honoured society, bids him bear to you our highest appreciation of the great work of your members and our earnest good-will and greetings.

The science of geology in all of its branches bears the ennobling marks of the efforts of your members, and we feel assured that as the centuries pass your works of the present will take high place in bringing to light and properly interpreting the great truths which are the basis of knowledge.

E. J. MOLERA, President.

F. O'B. GUNN, Corresponding Secretary.

MARSDEN MANSON, C.E., Ph.D., Delegate.

THE GEOLOGICAL SOCIETY OF AMERICA.

THE Geological Society of America sends most cordial greetings to the Geological Society of London upon the completion of a century of service to the science of Geology.

She looks forward confidently to a second century of service no less influential and fruitful than that now so happily closing.

To Americans in general England is the Mother Country from which have come language, customs, institutions, and law, while American geologists have inherited from members of the Geological Society of London sound views which have led to the firm establishment of Geology in the Western World.

It is, therefore, with feelings essentially filial that this message of heartfelt congratulation is sent to the parent society.

CHARLES R. VAN HISE, President.

EDMUND OTIS HOVEY, Secretary.

THE GEOLOGICAL SOCIETY OF WASHINGTON, WASHINGTON, D.C.

THE Geological Society of Washington greets the Geological Society of London with most cordial congratulations upon the notable occasion of its Centenary celebration. The development of the Science of Geology during the past century is in large degree due to a long list of eminent investigators and thinkers who have been Members of the Geological Society of London: and the part that Society has played in promoting their work both by publication of results and by affording the stimulus of discussion and personal association in its meetings constitutes a record which no other Geological Society can ever hope to rival.

One of the youngest of Geological Societies thus takes great pleasure in offering to the Geological Society of London this inadequate tribute, in recognition of the great service it has rendered

to the science of Geology ; and in expressing the belief that the record of the coming Century will also be worthy of the highest praise.

September 26th, 1907.

WHITMAN CROSS,
Delegate.

THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

THE section of Geology and Geography of the American Association for the Advancement of Science transmits its greetings and congratulations upon a Century of inspiring work in Geological Science, acknowledging with gratitude the profound obligation of American Geology to the ideals of the Founders of the Geological Society of London and the achievements of its Members.

The American Association for the Advancement of Science has selected the following delegates to present this Address :—

Professor J. P. IDDIGS, University of Chicago,
Vice-President, Section of Geology and Geography.

Professor JOHN M. CLARKE,
Director N.Y. State Geological Survey.

Professor R. S. TARR, Cornell University,
Acting President, Association of American Geographers.

With the assurance of our most distinguished consideration,

F. P. GULLIVER, Secretary, Section of Geology and Geography.

THE UNITED STATES GEOLOGICAL SURVEY.

THE United States Geological Survey sends to the Geological Society of London its warmest congratulations on its hundredth birthday.

In so doing it desires to express the obligation which the Geologists of the Survey feel themselves to be under, to the members of the Geological Society of London, who, in the past as in the present, have stimulated thought and research in the great Science of which so much is expected, and which all members of the profession are striving to maintain upon a high and noble plane.

GEORGE OTIS SMITH, Director.

Washington, September 1st, 1907.

THE BUREAU OF GEOLOGY AND MINES, MISSOURI.

THE Bureau of Geology and Mines (Geological Survey) of Missouri, over which I have the honour to preside, extends hearty greetings to the Geological Society of London upon the occasion of her hundredth birthday.

The influence of your Society has permeated the lives of all sister geological organisations, through the untiring investigations

of her members. This Bureau has been stimulated by the publications which she has so generously contributed to our department as well as through the individual publications of her members.

May the past century be only the beginning of a long and useful career.

Rolla, Mo., September 16th, 1907.

E. R. BUCKLEY,
Director.

THE HARVARD GEOLOGICAL CONFERENCE.

THE Harvard Geological Conference, composed of teachers and students of Geology in Harvard University, begs leave to send greetings to the venerable and vigorous Geological Society of London on so happy an occasion as the centenary celebration of its formation; and joins heartily in the universal recognition of the beneficent and wide-spread influence that the Society has exerted on the Science.

We residents in the New World of History, to which some would give the compensating title of the Old World of Geology, would fain accept so consolatory a distinction; but in view of your well-earned celebration, we must relinquish all claims to antiquity and concede that the World which possesses a formation so ancient as a Geological Society a century old should be regarded as the veritable Old World, geologically as well as historically.

W. M. DAVIS.

JOHN E. WOLFE.

J. B. WOODWORTH.

DOUGLAS WILSON JOHNSON.

CHARLES PALACHE.

E. J. SAUNDERS.

WALTER N. LACY.

H. N. EATON.

CHARLES MASON FARNHAM.

RALPH E. SAWYER.

H. E. MERWIN.

ROBERT T. JACKSON.

CHAS. U. BROWN.

BURTON MERRILL RAINY.

GEORGE R. MANSFIELD.

FRED. H. LAKER.

ARTHUR K. ADAMS.

RALPH W. RICHARDS.

JULIUS W. EGGLESTON.

ROBERT DE C. WARD.

BRITISH COLONIES AND DEPENDENCIES.

FRANK DAWSON ADAMS, D.Sc., F.R.S., Logan Professor of Geology and Palæontology in the McGill University, Montreal, spoke on behalf of the British Colonies and Dependencies. The following Addresses were presented :—

DOMINION OF CANADA.

MCGILL UNIVERSITY, MONTREAL.

THE Governors, Principal, and Fellows of McGill University desire to convey to the President and Council of the Geological Society of London their warmest felicitations on the occasion of the celebration of the Centenary of the Society's foundation.

The development of geological studies in the Dominion of Canada has been strongly influenced from the very first by the Geological Society of London. It was Dr. James Bigsby, an active member of this Society, who in 1818, a few years after the foundation of the Geological Society, visited Canada and made the earliest serious contributions to Canadian geological science, which were embodied in a number of papers, several of which appeared in the Transactions and in the Quarterly Journal of the Society.

When in 1842, the Canadian Government decided to establish an official Geological Survey of this country, William Logan, Esq. (afterwards Sir William Logan), also a Fellow of the Geological Society of London, was chosen as the first Director. From that time to the present the close relations between the Geological Society of London and the geologists of the Dominion of Canada have continued. In this University the bonds of union with the Geological Society of London have been especially close, not only because it is to Sir William Logan that McGill University is indebted for the foundation of the Chair of Geology and for the Logan Medal, granted for distinction in geological science, but also owing to the fact that the first Logan Professor, Sir William Dawson, was throughout his long life a Fellow of the Geological Society of London, receiving the Lyell Medal from the Society in 1881 and being a very frequent contributor to the pages of the Quarterly Journal. The chief results of his scientific labours are embodied in papers which have appeared in the Society's Journal.

The same cordial interest in all that makes for the success and welfare of the Geological Society of London is still felt at McGill University, and in presenting its sincere congratulations on the magnificent progress which has been made by the Society during the past century and on the wonderful results which have been accomplished by it, the University desires to express the earnest

hope that the leading place which the Geological Society of London has hitherto held in geological study may ever be maintained, and that the Society may in the future, as it has in the past, be a centre of inspiration for all students of geology throughout the Empire.

W. PETERSON, M.A., LL.D., Principal and Vice-Chancellor.

FRANK D. ADAMS, D.Sc., F.R.S., Logan Professor of Geology.

Montreal, September 26th, 1907.

THE ROYAL SOCIETY OF CANADA.

THE Royal Society of Canada desires to convey to the Fellows of the Geological Society of London its congratulations on this the Centenary celebration of the founding of your distinguished Society. It is not given to many scientific societies to have been in existence one hundred years, and geological science practically dates back to the period when your founders banded themselves together and formed the first Geological Society.

It is highly gratifying to note the remarkable progress which has been achieved in geological science during the century of the existence of your Society. Not only in the British Isles, but also throughout the Empire and in every quarter of the globe your example has been followed and geological societies established, all of which have contributed to the vast amount of knowledge acquired and gathered in publications and museums for the benefit of mankind.

In extending to you its sincere congratulations upon the noble work which you have done in geological science throughout the world, the Royal Society of Canada is not unmindful of the very prominent part which your Society has played in Canada. When the Geological Survey of Canada was founded in 1842, it was on the recommendation of four of the Past-Presidents of the Geological Society of London that Lord Stanley, then Secretary of State for the Colonies, at the request of Sir Charles Bagot, Governor General of Canada, designated Sir William E. Logan as 'Provincial Geologist' or Head of the Geological Survey. Nor can we forget the manner in which Sir Henry de la Beche and his colleagues of Her Majesty's Geological Survey of Great Britain came forward and volunteered assistance to Logan in his labours, not only in the way of chemical analysis, but also in the determination of new fossils which could not be done in Canada at that time, and without which a geological survey could not be satisfactorily conducted.

In your Transactions, Proceedings, and Quarterly Journal are embodied a large amount of useful knowledge bearing on the geology of British North America, dealing with those portions of our continent which now constitute the Dominion of Canada and our sister colony of Newfoundland. In the writings on Canadian geology and geological explorations by Bigsby, Lyell, Palliser, Rae, Baddeley, the Earl of Selkirk, Jukes, Owen, Hector, W. B. &

P. P. Carpenter, Bunbury, Richard Brown, T. Rupert Jones, Robert Etheridge, Sutherland, Haughton, Hinde, and other contributors is to be found a rich mine of excellent material. To you, Mr. President, and to the Fellows of the Geological Society of London, Canada owes a deep debt of gratitude also for the encouragement, hearty co-operation, and valuable assistance given by your Society to Canadian geologists. In countless ways you have stimulated their zeal and made them feel at home in your meetings and discussions. Among the links which bind the Royal Society of Canada to the Geological Society of London may be mentioned the fact that Sir William Dawson, the first President of the Royal Society of Canada, was for many years one of the distinguished Fellows of your Society, one on whom you had repeatedly bestowed honours and distinctions. Among other distinguished Fellows of your Society who were founders of the Royal Society of Canada may be mentioned Dr. T. Sterry Hunt, Dr. George M. Dawson, former Director of the Geological Survey of Canada, Dr. A. R. C. Selwyn, who for twenty-five years was Director of the Geological Survey of Canada, Dr. Robert Bell, Chief Geologist of the Survey, Dr. B. J. Harrington, Professor of Chemistry and Mineralogy in McGill University, and Dr. J. F. Whiteaves, Palæontologist and Zoologist to the Geological Survey of Canada, whom you honoured this very year (1907) with the Lyell Medal, for his distinguished contributions to palæontology.

To the present generation of Fellows of your Society Canada owes a further debt of gratitude for their generous aid and writings on many critical points in geology and palæontology, and for their counsel and advice on knotty points in nomenclature, classification, etc., whereby they have rendered most valuable assistance.

In common with our brethren from various portions of the world who have come to London to celebrate this anniversary of the founding of your Society, we present to you the sincere felicitations of the Royal Society of Canada, and wish your Society a continued career of increasing activity.

FRANK D. ADAMS,
HENRY M. AML.

September the twenty-sixth, one thousand nine hundred and seven.

THE GEOLOGICAL SURVEY OF CANADA.

THE Director and Members of the Geological Survey of Canada present to the Fellows of the Geological Society of London their hearty greetings and sincere good wishes on this memorable occasion, which marks the hundredth anniversary of the founding of your distinguished Society. Canadian geologists appreciate highly the privilege of taking part in these proceedings to-day, and cordially unite with their brethren from the New as well as the Old World in tendering you their congratulations.

The occasion which we commemorate has an interest not only for your Society and for geologists in England, but also for geologists throughout the world. It forms an important landmark in the history of Geology. Your Society has instituted geological research and inspired geological thought in all parts of the world. On it have been patterned the kindred Societies whose representatives are gathered in these now historic halls to pay you homage and to acknowledge the debt which geological science owes to your Society and to the work of its illustrious members. You have contributed to 'the mineral history of the British Isles' in a thorough and practical way, you have advanced the science by 'unifying nomenclature,' by 'facilitating the publication and dissemination of new facts,' and have promoted intercourse between the workers in the science, thereby stimulating their zeal. These your first and immediate duties you have done faithfully and well. But you have done more. From the inception of your Society you have promoted geological research in all parts of the Empire and in every quarter of the globe, in a manner which calls for unstinted praise and admiration. Your Transactions, Proceedings, and Journal are a storehouse of knowledge concerning the geology of the world.

Canada, Mr. President, is particularly indebted to the Geological Society of London. The earliest systematic geological work in Canada was done by Bigsby, one of the first members of your Society. He was followed by Lyell, Bayfield, Bunbury, Richardson, Brown, and Owen, all of whom have made extensive and valuable contributions to Canadian geology. Besides these there have been researches by Sutherland, Salter, the Earl of Selkirk, Isbester, Sir Andrew Ramsay, W. B. & P. P. Carpenter, T. Rupert Jones, Robert Etheridge, Sir James Hector, Haughton, Palliser, Rae, Davidson, and others. These men penetrated all portions of what is now the Dominion of Canada, and in the one hundred and more important memoirs and papers which have appeared in your publications bearing upon the geology of Nova Scotia, New Brunswick, Quebec, Ontario, the North-West Territory, British Columbia, the Hudson Bay region, and the islands of our Arctic Archipelago, have thrown light upon many of its geological problems.

But it is not alone what has been done directly by the Fellows in geological work in Canada that places us under such obligations to your Society. We remember the important part played by the Geological Society of London in the founding of the Geological Survey of Canada and in its work, from its inception in 1842 to the present day. It was on the recommendation of Sir Henry T. de la Beche, Sir Roderick I. Murchison, the Rev. Prof. Adam Sedgwick, and the Rev. Prof. Buckland, four worthy past-Presidents of the Geological Society of London, that William Edmond Logan, a young Scottish-Canadian, was selected to organise and direct the Geological Survey of Canada. Their selection of Logan was abundantly justified by the monumental work accomplished by him and his associates in the face of almost insurmountable difficulties. His 'Herculean task,' as Sedgwick aptly termed it, might have

been too heavy for even Logan's shoulders, had it not been for the kindly advice and generous help freely accorded by the Fellows of your Society and the Officers of Her Majesty's Geological Survey of Great Britain. This assistance was of the most practical kind, and included many chemical analyses and determinations of new fossils which it was then impossible to have made in Canada, and without which a geological survey could not have been satisfactorily conducted.

The intimate connexion between the Geological Society of London and the Geological Survey of Canada was continued under Logan's successors Selwyn and Dawson, both of whom took an active interest in the Society's work and contributed frequently to its publications. The best-known names in Canadian geological literature are to be found in the list of past and present Fellows of your Society.

There remains now the pleasant duty of acknowledging our obligations to you, Mr. President, and to all the Fellows of your Society, who have contributed to the progress of Geology in Canada. The names of many of these, like Huxley, Lapworth, Teall, Marr, Bonney, Blanford, Evans, Judd, the Woodwardes, Sollas, Whitaker, and others are household words amongst us, and their achievements are a constant aid and inspiration to us. The excellent 'History of the Geological Society of London' records your labours at home and abroad, but from no recital of achievements can a proper estimate be placed on the influence you have had directly and indirectly upon the development of Geology in Canada.

In conclusion we feel assured that the helpful relationship between the Geological Society of London and the Geological Survey of Canada will be maintained, and we hope that, by emulating your devotion to science and truth we may, by our labours, justify the interest you have taken in us and so repay your Society in some measure for the benefits we have received.

A. P. LOW.	J. F. WHITEAVES.	ALFRED S. BARLOW.
R. W. BROCK.	HUGH FLETCHER.	D. B. DOWLING.
R. W. ELLS.	ELFRIC DREW INGALL.	ROBT. A. A. JOHNSTON.
R. G. MCCONNELL.	E. R. FARIBAULT.	G. A. YOUNG.
WILLIAM McINNES.	H. M. AMI.	W. J. WILSON.
F. D. ADAMS.	L. M. LAMBE.	CHARLES COMSELL.

EMPIRE OF INDIA.

THE GEOLOGICAL SURVEY OF INDIA.

ON the occasion of the Hundredth Anniversary of the founding of the Geological Society of London, we, the undersigned Officers of the Geological Survey of India, desire to offer our heartiest congratulations and greeting.

In doing so we recall with special pride the names of those from our ranks whom the mother of Geological Societies has been pleased to honour from time to time: in 1883 the Wollaston Medal was bestowed on Dr. W. T. Blanford, and again in 1888 on Mr. H. B. Medlicott, names which Indian Geologists will never be likely to forget. In 1902 Mr. R. Lydekker received the Lyell Medal, whilst in 1898 and 1899 the same medal was successively awarded to Professor W. Waagen and Lieut.-Gen. C. A. McMahon, the latter of whom, though we regretfully cannot claim him as having belonged to our official corps of field-workers, contributed voluminously to the Memoirs and Records of the Department. As an illustration of the Society's early interest in the Geology of India we would remind you that the first of your long list of distinguished predecessors, Mr. G. B. Greenough, was the author of the earliest geological map of India; whilst Dr. Blanford, who more than anyone has done so much for natural science in India, was himself elected President of the Society in 1888.

Standing on the threshold of a new century in the history of the Society, our Department in India reverently wishes it a happy and prosperous future; and in this wish our old retired colleague, Mr. R. Bruce Foote, who now completes fifty years' work in India, and our fellow-worker, Mr. H. H. Hayden, at present exploring beyond the frontier, though unable to add their signatures to the list, have expressed a desire to be identified with us.

T. H. HOLLAND.	GUY E. PILGRIM.	J. COGGIN BROWN.
T. H. D. LA TOUCHE.	G. H. TIPPER.	H. CECIL JONES.
C. S. MIDDLEMISS.	H. WALKER.	A. M. HERON.
P. N. DATTA.	E. H. PASCOE.	W. A. K. CHRISTIE.
E. VREDENBURG.	A. K. HALLOWES.	T. R. BLYTH.
L. L. FERMOR.	G. DE P. COTTER.	

COMMONWEALTH OF AUSTRALIA.

THE ROYAL SOCIETY OF TASMANIA.

To the Geological Society of London now about to celebrate the hundredth Anniversary of its establishment, the President and Council of the Royal Society of Tasmania, the earliest institution founded in Australasia under the patronage of Her Most Gracious Majesty the late Queen Victoria for promoting the study of Physical Science and Natural History, send respectful and cordial greeting.

In tendering our congratulations on the completion of so long a period of service in the cause of Science, it is not alone the high and honourable rank which the Geological Society of London has attained throughout the civilised world that claims our recognition.

The important services rendered by representatives of the Society

to all parts of the Commonwealth of Australia in promoting geological research, and aiding in the development of their material resources, are also on record and are duly appreciated.

We repeat our congratulations on the approaching celebration of the Centenary of the Geological Society, and confidently hope that its career in the future may be as prosperous as it has been in the past.

G. STRICKLAND, President.

A. G. WEBSTER, Chairman of Council.

Hobart, 29th July, 1907.

DOMINION OF NEW ZEALAND.

THE NEW ZEALAND GEOLOGICAL SURVEY.

THE officers of the Geological Survey of New Zealand desire to extend their most hearty congratulations to the Geological Society of London on the occasion of its One Hundredth Anniversary, and to express their great indebtedness for the inspiration that they have received from the Society's widespread endeavour in the science of Geology.

J. M. BELL, Director.

GREAT BRITAIN AND IRELAND.

Professor W. J. SOLLAS, of the University of Oxford, speaking on behalf of the Delegates of the Universities and other Educational Institutions of Great Britain and Ireland, said that the bonds which united our educational institutions with the Society were the close ties of family relationship. Even from the earliest days, when the Society was yet in its infancy, these institutions, especially Oxford and Cambridge, had never ceased to contribute to it their most distinguished sons. In our Universities the minds of men were broadened by contact with the whole world of thought, but it was within our scientific societies that they were concentrated to the finest issues and exalted to their most intense performance. The fire which burnt tamely in the common air, burst into more dazzling brilliance when the innocent but unavailing nitrogen was removed and the kindred oxygen drew closer within a narrower space. So, when a Buckland or a Sedgwick left the academic grove to encounter within the walls of the Society a Murchison or a De la Beche, a Wollaston or a Lyell, we became aware of an intellectual flame, which lighted up earth's darkest secrets and even cast its beams into the abysses of past time.

Whatever our educational institutions had given to the Society

had been rendered them again with increase: for the Fellows of the Society had returned to their first love like Phosphor, Star of the Morning, carrying the light with them, so that now the mountain-peaks of rugged provinces apparently so remote as history and law, religion and philosophy, were already luminous with the approaching dawn. This light was the spirit of science; it was not learning, though learning was regenerated and transformed by it; it was rather a habit of the mind—nay, more, it was a passion of the soul!

What material benefit had resulted to mankind was too trite a subject for consideration now; but it was their Science which guided the miner to the coal, and this supplied our land with energy equal to the work of 5000 million slaves labouring daily throughout the year; she conducted the water to our thirsty cities, poured the gold of Africa into the lap of commerce, and discovered diamonds to adorn the fair. These things were, however, the by-products of her work, and had no share in the direct aims of the Society, whose one object was to foster right thinking on the mysterious problems presented by the planet on which we dwelt; and it was because the Geological Society had cherished this object with a single mind that it had achieved so noble a measure of success, and that they, the representatives of the Universities and other Educational Institutions in Britain, were able to offer their congratulations in language at once eulogistic and sincere.

Professor T. McKENNY HUGHES, of Cambridge, read the Address of the University of Cambridge; and then the following Addresses were presented:—

THE UNIVERSITY OF OXFORD.

Societatis Geologicæ Præsidenti et Sociis Cancellarius Magistri
et Scholares Universitatis Oxoniensis S. P. D.

GRATULAMUR vobis, viri doctissimi, centesimum annum a Societate vestra condita celebrantibus.

Sæpius in hac Academia gloriari juvat prisæ nos antiquitatis non omnino esse inexpertos, cum diligentissime exploremus quidquid prior hominum ætas vel litteris mandaverit vel saxis inculpserit; quæ sibi domicilia, quas urbes, quæ monumenta exstruxerit. Vestræ autem scientiæ proprium est rerum primordia scrutari, et vicissitudines terrenas quæ per infinitam sæculorum seriem fuerint effectæ adumbrare. Vestris investigationibus quasi ante oculos proponitur quo ordine scopulorum strues nunc ignibus fuerit liquefacta nunc aquis veluti crassamentum demissa; quo motu solida telluris superficies vel dehiscens vel in rugas replicata erexerit montes, valles excavaverit, terram ponto pontum terra mutaverit; quæ monstra seu pelagi seu littorum paludumque recessus habitaverint. Mirum certe diuturnitatis spectaculum, quod dum

respicimus mille proinde sæcula in punctum temporis contrahi atque coarctari videntur.

Hujus scientiæ auctores præcipuos cum memoria repetimus quot quantique viri sunt numerandi! quorum alii alia fortasse placita defendebant, sed in hoc uno cuncti conspirabant, scilicet ut argumentis certissimis comprobaretur rationis geologiæ cognitio.

Nobis per jucundum est recordari ex illustrissimis his viris nonnullos Oxonia nostra prodiisse, quos inter commemorare licet Joannem Kidd, Wilhelmum Buckland, Carolum Lyell, Joannem Phillips, Josephum Prestwich, Alexandrum Green, quorum labores Tu quidem, Præsidens honoratissime, summa cum laude excepisti.

Delegamus hodie Professore nostrum Geologiæ, Wilhelmum Johnson Sollas, e Collegio Univ., Societatis Regiæ Socium, ut Concilio vestro lætus intersit et gratulationes nostras secum ferat.

Datum in Domo nostra Convocationis die vicesimo primo mensis Maii, A. S. MCMVII.

THE UNIVERSITY OF CAMBRIDGE.

Societati Geologiæ Londiniensi S. P. D. Universitas Cantabrigiensis.

ABHINC annos prope centum, scientiæ vestræ in sæculo (ut aiunt) heroico, Societas vestra præclara mensis Novembris die tertio decimo a viris tredecim, auspiciis tamen optimis, condita est. Centum autem annorum series, studiorum quidem vestrorum in provincia, orbis terrarum quasi in vita, spatium minimum est; vitæ vero humanæ terminum solitum longe excedit. Atqui centum illorum annorum per partem plus quam dimidiam inter nos regnabat scientiæ vestræ signifer ille indefessus, Adam Sedgwick, abhinc annos duodeseptuaginta Societatis vestræ præses electus. Regem Cambriæ, Regem etiam Siluriæ, par nobile amicorum, finium suorum utrumque propugnatorem acerrimum, non sine laude vobis olim præfuisse profitemini. Sunt etiam alii inter præsides vestros viri insignes, quos aut alumnorum nostrorum in numero vel esse vel fuisse gloriamur, aut propter merita eorum eximia inter doctores nostros honoris causa adscivimus. E doctoribus illis unum lætamur Societati vestræ in hoc biennium electum esse denuo præsidem. Lætamur etiam alumni nostri illustris, Francisci Baconis, e Novo Organo verba illa præclara Actorum vestrorum in ipso limine per tot annos inscripta contemplari, in quibus ei, quibus ‘cordi et curæ sit, non tantum inventis hæere’, ‘sed ad ulteriora penetrare’, ‘tanquam veri scientiarum filii’ in Societatem vestram invitantur. Gratulamur igitur Societati vestræ, viri studiorum communium vinculo nobis coniunctissimi, quod scientiarum tot filios veros sociorum vestrorum numero per tot annos addidistis, et congressus vestri sæcularis in honorem has litteras benevolentiam nostram testantes, legato nostro perquam idoneo, scientiæ vestræ Professori nostro venerabili, ad vos tradimus perferendas. Valet.

Datum Cantabrigiæ mensis Iunii die sexto A. S. MCMVII.

THE UNIVERSITY OF ST. ANDREWS.

WE, the Senatus Academicus of the University of St. Andrews, having learned that you are about to celebrate the Centenary of your Society's foundation, desire to associate ourselves with the homes of learning, and especially of scientific investigation, throughout the world, whose representatives will be hastening to offer you their congratulations and good wishes on this auspicious event.

In the beginning of last century, nearly a hundred and fifty years after the foundation of the Royal Society, a group of institutions for the furtherance of various branches of Science came into existence, and of these yours was one of the earliest. We cordially recognize the excellence of the work which has been done by its members, and join with you in honouring the many illustrious names by which its history has been adorned. Among these are many distinguished Scotsmen.

We are happy also to number among our Honorary Graduates the distinguished Geologist who will preside over your proceedings this year, and on whom you have conferred the well-merited honour of being called for the second time to the Chair of your Society. We are grateful to Sir Archibald Geikie for the interest he has taken in our University and especially in the teaching of Geology in St. Andrews.

In a little more than three years this University will have reached its Quincentenary, and this fact may not lessen in your eyes the value of this greeting as from an elder to a younger sister. We shall hear with the liveliest interest the report of your proceedings, and trust that in succeeding years you may greatly advance that Department of human knowledge which, in so far as Great Britain is concerned, is regarded as committed in a special degree to your care and guidance.

JAMES DONALDSON, Principal and Vice-Chancellor.

THE UNIVERSITY OF GLASGOW.

TO the President, Council, and Fellows of the Geological Society of London, the Senatus Academicus of the University of Glasgow presents its hearty congratulations on the celebration of their first Centenary. It recognizes with high appreciation the contributions which during a hundred years the Society has made to the advancement of Geological Science in general, and in particular to the elucidation of the geological structure and history of Western Scotland. The memoirs published by the Society include many which will ever remain as primary documents in relation to Scottish Geology. Among these the Senatus takes pride in recalling the

pioneer work of James Nicol, a former Lecturer of the University. His researches into the structure of the North-Western Highlands were, after many years of denial, confirmed and vindicated by a subsequent generation of geologists, whose conclusions are likewise recorded in the Society's 'Journal.'

To the distinguished President, and to many of the Fellows of the Society, who have chosen Scotland as the field of their enquiries, science is indebted for the interpretation of the complex processes whereby, through agencies volcanic, glacial, aquatic, and aerial, the scenery of the Scottish Highlands has through long ages been moulded and sculptured into its present grandeur. Labours such as theirs have enriched the resources of all teachers of science and students of nature, and as an educational body the Senatus would express its gratitude for the light and knowledge they have diffused. It is well assured that through centuries to come the Geological Society of London will uphold and enhance the great repute it has achieved as a fellowship of strenuous and enlightened seekers after truth.

DONALD MACALISTER, Principal and Vice-Chancellor.

WILLIAM STEWART, Clerk of Senate.

Glasgow, September 1907.

THE UNIVERSITY OF DUBLIN.

THE Geological Society of London has extended to the University of Dublin a friendly invitation to share in its celebration of a hundred years of work for Geological Science.

We accept the invitation with pleasure. We remember that many have left the University of Dublin, equipped with such early training as we could impart, and found encouragement, inspiration, and wholesome criticism in the Geological Society of London.

If any proof of community of sympathies between the Geological Society and this University were required, we recall with pride that in 1835 the illustrious pioneer, William Smith, by virtue of a beneficent custom, became the adopted son of the University of Dublin, and as an Honorary Graduate of the University was admitted into the family of our Alma Mater. This appreciation of the first recipient of the Wollaston Medal may, we believe, justly be claimed by us as showing, even at that early date, our respect and veneration for the great Science which the Geological Society of London exists to foster and encourage.

In the measured advance of geological events the span of a hundred years is but a brief period—the growing rock increases but a little, the vanishing hills show no visible change. The hundred years that are closed saw mankind first awakened to interest in the study of the past history of the Earth; and although

generations come and go in that little time, and although our lives are not attuned to the rhythm of geological changes, each member of our race in his intellectual life may now review the whole vast history of the world.

To lay open the leaves of the Book of Nature and encourage the historian who would decipher its inmost meaning is the work of the Geological Society. This is work which extends our lives back into the past, and even prolongs our vision forward into the future.

May the Geological Society of London long continue to carry forward its mission of promoting a great and ennobling Science.

ROSSE, Chancellor.

THE UNIVERSITY OF EDINBURGH.

THE Senatus Academicus of the University of Edinburgh have had much pleasure in accepting the courteous invitation of the Geological Society of London to its Centenary Celebration.

They warmly congratulate the Society on its notable achievements and the high position it has so long held in the estimation of lovers of science all the world over; and they rejoice to know that it is still fired with the zeal and lofty enthusiasm which distinguished its founders a hundred years ago.

In the opinion of the Senatus it would be difficult to overestimate the influence exerted by the Society on the development of geological investigation and research. After its foundation raw speculation and vague hypothesis—so rife in the earlier days of the science—ceased to divert the attention of serious students. Indeed, it is not too much to say that the birth of the Society was the new birth of Geology.

The Senatus welcome this opportunity of expressing their admiration of the oldest Geological Society in the world, and cordially wish it God-speed.

WM. TURNER, Principal.

L. J. GRANT, Secretary of Senatus.

JAMES GEIKIE, Professor of Geology.

Edinburgh, 31st July, 1907.

THE UNIVERSITY OF LONDON.

THE University of London desires to take part in celebrating the Centenary of the Geological Society. The Society has elaborated the principles and practice of Geological Science and the University has been glad to recognize the Science as a principal subject in its curriculum.

THE VICTORIA UNIVERSITY OF MANCHESTER.

THE Victoria University of Manchester offers cordial congratulations to the Geological Society of London on the celebration of its Centenary in 1907.

The Society, by encouraging original research and co-ordinating individual effort, has rendered invaluable assistance to the advance of Geology as a science, and has helped to lay a secure foundation for the study of the ancient history of the Earth. Its influence has been felt not only in Britain and the Colonies, but over the whole world, and it has enrolled among its members many of the chief scientific thinkers of the day.

The Victoria University of Manchester, in sending its greeting through Professor Boyd Dawkins, looks forward with confidence to a continuation in the future of that collaboration of the Society with the Universities, Colleges, and other Institutions which has had such good results in the past as regards both the dissemination and the advancement of knowledge.

ALFRED HOPKINSON, Vice-Chancellor.

EDWARD FIDDES, Registrar.

Manchester, 31st July, 1907.

THE UNIVERSITY OF LEEDS.

THE University of Leeds offers its congratulations to the Geological Society of London on the completion of the first century of its career.

Such congratulation indicates no new attitude on the part of the University towards the science for the advancement of which the Geological Society exists. For in the very beginning of its existence, as the Yorkshire College of Science, it recognised the importance of Geology by electing among its earliest professors a distinguished member of the Society, the late Professor Green.

Since its inception the Geological Society of London has been renowned for its contributions to the advancement of geological knowledge and for the long line of distinguished men who have been proud to be included in its list of Fellows. And it has interpreted its title in no narrow or sectarian spirit. Catholic as the range of Geology is the catholicity of its members; widely known as are the names of Darwin, Huxley, Auebury, Murchison, and the Duke of Argyll in the world of Geology, they are no less renowned in other branches of physical and natural science, and some of them have done distinguished service in the world of politics.

The Society has always been remarkable for the encouragement

and help it has given to young geologists; and in this, by no means the least valuable among its important functions, the work of the Society continues and fulfils the propædæutic efforts of the University. The work of the University in training the young geologist ceases with the years of his post-graduate study. To the world-renowned Geological Society of London he must look for criticism of his riper labours and for such recognition and encouragement as they may deserve.

For such an association of scientific workers, which is thus continually supplied with fresh life, and with the enthusiasm of youthful students, a future yet more successful than the past may confidently be foretold; and that this future may yield notable results in the advancement of knowledge is the best, as it is also the most confident, wish which the young University of Leeds can offer to the mature yet vigorous Geological Society of London.

N. BODINGTON, Vice-Chancellor.

The University, Leeds, September 24th, 1907.

UNIVERSITY COLLEGE, LONDON.

THE Committee of the University of London University College, desire heartily to associate themselves with the delegates from the numerous Scientific and Educational Bodies all over the globe, assembled in this country to congratulate the Geological Society of London on the occasion of the Celebration of the Centenary of its foundation.

The Committee desire to express their appreciation of the valuable work that has been carried on by the premier Geological Society of the World for the advancement of all branches of geological knowledge, and especially for the encouragement given by it in the direction of original research.

The association between this College ever since its foundation and the Geological Society has been a close one; no fewer than three of its past presidents have been directly connected with the College.

The first President of the Society, George Bellas Greenough, served on the Council of University College, London, from 1835 to 1844, and in 1855 presented his extensive collections of organic remains which form the nucleus of the present Geological Collections. Another distinguished President of your Society, Sir Andrew Ramsay, held the Chair of Geology in this College from 1846-1851, while again a third of your Presidents—the Rev. Professor T. G. Bonney—occupied the same Chair for no fewer than 23 years. In many other ways also the association has been close.

In repeating, therefore, its hearty congratulations on the work done by the Society during the past Century the College looks

forward to another hundred years of equally splendid work and to a continuation of the close ties by which the College has been bound to the Society in the past.

REAY, Chairman of the College Committee.

T. GREGORY FOSTER, Provost.

EDMUND J. GARWOOD, Yates-Goldsmid Professor of Geology.

October, 1907.

KING'S COLLEGE, LONDON.

THE College desires to congratulate the Geological Society of London on the completion of its Centenary. On its staff have been Charles Lyell, John Phillips, D. T. Ansted, Edward Forbes, Martin P. Duncan, and Thomas Wiltshire, who were all honoured Officers of the Geological Society. The College has thus been in intimate association with the Geological Society during the period when the science took the systematic form which has made it a powerful engine for practical mental training in University Studies. And it realises that the Geological Society has always exemplified the mutual relations of Teaching and Research, in which King's College has endeavoured to follow the Geological Society in the study of rocks and fossils and the applications of Geology in Engineering to the wants of the time.

H. G. SEELEY, Professor of Geology.

THE ARMSTRONG COLLEGE IN THE UNIVERSITY OF DURHAM.

To Sir Archibald Geikie, K.C.B., D.C.L., Sc.D., LL.D., Sec.R.S.,
F.R.S.E., President of the Geological Society of London.

IN the name of the Council of this College we hereby beg to offer warm congratulations to yourself and the Geological Society of London over which you so worthily preside on the completion of the hundredth year of its brilliant and beneficent existence.

It is not the least of the many endeavours of this College to spread abroad the principles of that branch of science which it is the province of your Society to cultivate. It is a duty not to be evaded in a region such as ours, where the chief industries largely depend upon the skilful forecasting of what lies hidden in the Earth beneath us. In carrying out this teaching to the utmost of our power we have undoubtedly benefited from the existence of the Geological Society. Its wisely ordered publications have provided us with a storehouse of ever new and carefully recorded facts, and with a standard of criticism invaluable in the case of a living and growing science. To these publications several of our past students

have been contributors, and by them as well as by their teachers your Society must ever be regarded as being, in matters geological, a seat of judgment whose verdict stamps their work, and a universally recognised fountain of honour.

G. W. KITCHIN, D.D., President.

G. A. LEBOUR, D.Sc., Vice-Principal.

F. H. PRUEN, Secretary.

Newcastle-upon-Tyne, September 23rd, 1907.

UNIVERSITY COLLEGE, BRISTOL.

THE Senate of University College, Bristol, desires to express its sincere appreciation of the splendid results achieved by the Geological Society during a century of patient work.

C. LLOYD MORGAN, Principal.

S. H. REYNOLDS, Professor of Geology.

September, 1907.

QUEEN'S COLLEGE, BELFAST.

WE, the President and Council of Queen's College, Belfast, have pleasure in tendering to you our sincere and most hearty congratulations on the completion of the hundredth year of the history of your Society.

The Geological Society of London has not only witnessed the rise, progress, and growing importance of the great branch of Science with which its labours are associated; but has itself contributed in no inconsiderable degree to that advance.

We sincerely trust that many years of useful and happy work still lie before the Society, and that its labours in bringing to light and deciphering the Records imprinted in the rocky pages of the great Volume which it is your task to study and interpret, may be attended by a greater and greater success.

We have had pleasure in appointing Miss Mary K. Andrews of this City, who is not only a devoted student of Geology but one hereditarily interested in the advancement of Science, to represent us at the celebration of your Centenary and to convey to you these our Greetings.

Signed in the name and by the Authority of our College and sealed with our Common Seal this 18th day of September nineteen hundred and seven.

J. HAMILTON, President.

JOHNSON SYMINGTON, Registrar.

THE ROYAL COLLEGE OF PHYSICIANS.

THE satisfaction of all of us here present to-day to celebrate with you the birth of the Geological Society of London a hundred years ago, is perhaps especially the sentiment of the learned body

on whose behalf it is my privilege to address you at this moment: for not only have we in our office as custodians of the public health participated in the benefits derived from your investigations, but also as men of science ourselves, linked up with every kind of philosophical inquiry, have we, working with you in your own sphere of interest, contributed materially to the advance of Geology itself from the early days of its straitened infancy to the robust and satisfactory adolescence it attains to-day.

Ten of your principal officers in the ten decades under review have been trained in medical science.

We, of the College of Physicians, have now entered upon the 389th year of our corporate existence; we took part in your foundation, as we fostered the rising of the Royal Society a hundred and fifty years before you; and in the plenitude of our priority and precedence, our wide influence acquired by the promotion of natural knowledge, we infer the assurance of your progression from the solid foundations on which you are building, and from the eminent services you have already rendered.

Your progress will not slacken; discovery will beget discovery; practical work, prudent and sagacious, will regulate the scope of generalization, and knowledge will overflow—to the benefit of mankind, the credit of our race, and the honour of the Geological Society of London.

Τεθμελίωτο γὰρ ἐπὶ τὴν πέτραν.

MICHAEL C. GRABHAM, M.D., Delegate.

THE ROYAL COLLEGE OF SURGEONS.

WE, the President, Vice-Presidents, and Council of the Royal College of Surgeons of England, have the honour to convey to the Geological Society of London our cordial congratulations on the occasion of the celebration of its centenary.

It is interesting to us to remember that from the Middle Ages onwards there have been Students and Teachers of Medicine and Surgery, as well as distinguished Anatomists, who have taken part in and stimulated geological researches.

In the history of the origin and progress of Geology occur the names, for instance, of Falloppio and Steno of Padua, and Cesalpino of Pisa; of Fuchsel of Germany; of Drs. Robert Hooke and Woodward of England, and of the illustrious James Hutton of Scotland, the propounder of the ‘Huttonian Theory,’ and the exponent of the uselessness of the many fanciful attempts to form what were called ‘Theories of the Earth’; whilst but a few years ago JOHN WHITAKER HULKE, F.R.S., who was President of this College, was also President of the Geological Society of London.

May we be allowed to express our admiration of the part taken

by the Society ever since its foundation in 1807 in encouraging and promoting the study of Geology as an inductive science; in unfolding numerous and unexpected truths; and in correcting many misconceptions and erroneous hypotheses; and may we add that we look forward with confidence to the discovery of still further important results as the outcome of the labours of the present and future Fellows of the Society?

In offering our best wishes for the success of the present commemoration ceremonies, we desire also to state what great pleasure we have felt in accepting the invitation of the Society to take part with it in its Centenary Celebration.

In witness whereof we have caused the Common Seal of the College to be hereunto affixed this 25th day of July, 1907.

HENRY MORRIS, President.

THE ROYAL COLLEGE OF SCIENCE AND THE ROYAL SCHOOL OF MINES.

On the memorable occasion of the Centenary of the foundation of the Geological Society, the Council of the Royal College of Science and the Royal School of Mines desires to express those sentiments of filial regard which the College has always entertained towards its Parent Society. To Sir Henry de la Beche, a former president of the Society, and an active pioneer in geological research and instruction—a man who was far ahead of his contemporaries in his conviction of the importance to this country of Scientific and Technical Education and of organized research into the Mineral Resources of the country—the College owes its origin. Its expansion in 1881 was brought about by the advice and under the direction of another enlightened educationalist, the late Thomas Henry Huxley—once Secretary, and later President of the Geological Society. While the Council of the College has numbered among its members many of the leading spirits of the Geological Society—Roderick Murchison, Edward Forbes, Andrew Ramsay, Warrington Smyth, and Clement Le Neve Foster—not a few of the most active workers in Geology, and of the contributors to the Society's Journal have been educated within the walls of the College. The Council hopes and believes that the cordial relations that have existed in the past between the Society and the College will be perpetuated in the future.

September 26th, 1907.

WILLIAM A. TILDEN, Dean.

FRANCIS FLADGATE, Registrar.

S. H. COX.

JOHN W. JUDD.

WILLIAM W. WATTS.

THE ROYAL COLLEGE OF SCIENCE FOR IRELAND.

THE Dean and Council of the Royal College of Science for Ireland tender their sincerest congratulations to the Geological Society of London on the hundredth anniversary of the founding of the Society. They are glad to think that the educational value of Geology has never been lost sight of in the curriculum of the College; and they welcome this opportunity of expressing the indebtedness of successive teachers of the subject in the College throughout forty years to the researches and discussions originated by the Fellows of the Geological Society of London.

W. N. HARTLEY, Dean of Faculty.

GRENVILLE A. J. COLE, Professor of Geology.

P. A. E. DOWLING, Registrar.

26th September, 1907.

BEDFORD COLLEGE, LONDON.

THE Council of Bedford College (University of London) offer their congratulations to the Geological Society of London on this celebration of the centenary of its foundation.

Bedford College is the College for women in London in which Science is fully represented and Geology is established as one of the lectureships. This lectureship, like many others in the College, is held by a woman at the present time. The College possesses also in the bequest of one of its benefactors a valuable series of specimens collected by a woman, in days when there was little opportunity of help for her study in this or allied subjects. The Council of Bedford College congratulate the Geological Society of London on the pioneer work in Geology which its founders initiated a hundred years ago, and on the work which it has encouraged and sustained since that time. In addition, the Council express their appreciation of the generous recognition of women's work by the Geological Society, shown in its ready acceptance and publication of the results of women's investigations, and in grants of its awards to women. The Council of Bedford College, in common with other institutions taking part in this centenary celebration, are proud that in this country the initiative was taken in founding the first Geological Society. They anticipate that the work of that Society, and of English investigators, both men and women, under its auspices, will continue in the future to carry on the honour already obtained by our country in the past.

A. H. D. ACLAND, Chairman of Council.

MARGARET T. TUKE, Principal.

CATHERINE A. RAISIN, Delegate.

London, 26th September, 1907.

THE ROYAL SCOTTISH MUSEUM.

THE Officers of the Royal Scottish Museum beg to offer to the Geological Society of London their hearty congratulations on the attainment by the Society of the hundredth anniversary of its foundation.

They recall the fact that the Geological Society of London is the oldest Geological Society in the world, and that it has proved one of the most potent influences in fostering the study of geological science and in directing its progress during the past century.

They enter the more sympathetically into the spirit of the present celebration because of the many links which connect the Royal Scottish Museum with the names of distinguished Scottish pioneers in the development of geological science. Among these may be mentioned Robert Jameson, Hugh Miller, and John Fleming, whose collections now form a part of the geological section of this Museum.

They feel that it is impossible to over-estimate the importance of the work which has been accomplished by the Society, especially by means of its 'Proceedings.' These publications include among their contributors every British Geologist of note, and contain many of the classical memoirs of the science.

The high position which the Society holds amongst the great scientific societies of the world is attested by the long roll of illustrious British Geologists who have filled its Presidential Chair, and by the names of the distinguished foreigners who have felt themselves honoured by its awards.

That the Society may long continue to fulfil the purpose for which it was founded and to occupy the position to which it has attained during the past century is the most hearty and sincere desire of the Officers of the Royal Scottish Museum.

JAMES J. DOBBIE, Director.

RAMSAY H. TRAQUAIR, formerly Keeper
of the Natural History Department.

The Royal Scottish Museum, Edinburgh, September 1907.

THE GEOLOGICAL SURVEY OF GREAT BRITAIN AND THE MUSEUM OF PRACTICAL GEOLOGY.

THE Geological Survey of Great Britain and the Museum of Practical Geology owe their existence in a great measure to the Geological Society of London. More than seventy years ago, Colonel T. F. Colby, Director-General of the Ordnance Survey, who had been elected a member of the Society in 1814, and Henry Thomas De la Beche, who had joined in 1817, co-operated in tracing the boundaries of the geological formations on the one-inch Ordnance-Map. At the commencement of his work De la Beche acted as a private individual, but in 1832 he was appointed by the Board of Ordnance 'to affix geological colours to the map of Devonshire, with the adjoining portions of Somerset, Dorset, and Cornwall.' Three

years later, in 1835, during the first presidency of Lyell, the Geological Society in its corporate capacity, supported by the Professors of Geology at Oxford and Cambridge (Buckland and Sedgwick), reported to the Master-General and Board of Ordnance on the practical and scientific advantages that would accrue if the Geological Survey, then in progress, were placed on a more independent footing, and received support from the Government. The proposal was favourably received by the Chancellor of the Exchequer, and in this way the Geological Survey came into existence as a Government Institution, seventy-two years ago. The close relation thus established at the commencement between the Society and the Survey has been maintained ever since. Richard Phillips, one of the Founders of the Society, became the Chemist and Curator of the Museum of Economic Geology in Craig's Court, the forerunner of the Museum of Practical Geology in Jermyn Street. Nearly all the members of the staff of the Geological Survey and Museum have been Fellows of the Society, forty-two have at one time or another served upon the Council, seven have been Secretaries, and thirteen have occupied the Presidential Chair. This intimate association has been of immense advantage to the Members of the Geological Survey and Museum, by bringing them into contact with non-official geologists and thus enabling them to extend their knowledge and improve their methods. It has also aided them in maintaining that enthusiasm for research which is sometimes referred to as the amateur spirit. The present members rejoice, therefore, in this opportunity of acknowledging their indebtedness and of offering to the Geological Society of London their heartiest congratulations and good wishes.

J. J. H. TEALL.

26th September, 1907.

THE GEOLOGICAL SURVEY OF SCOTLAND.

THE Officers of H.M. Geological Survey of Scotland offer their hearty congratulations to the Geological Society of London on the occasion of its Centenary Celebration.

They regard with admiration the efforts which it made after its foundation to check fruitless speculation and to place geological investigation on right lines. During its long career it has had a powerful influence on the development of the various branches of geological research.

They refer with pleasure to the numerous contributions of the highest value to Scottish Geology which have appeared in the publications of the Society, and to the important services which Scotsmen have rendered to the Society. They also note with pleasure the cordial relations which now exist between the Society and the Scottish branch of H.M. Geological Survey. They cordially express the hope that its future career may be one of uninterrupted success.

JOHN HORNE, Assistant to the Director.

26th September, 1907.

THE GEOLOGICAL SURVEY OF IRELAND.

THE Geological Survey of Ireland begs to congratulate the Geological Society of London most heartily on the attainment of the hundredth anniversary of its foundation, and in doing so conveys the cordial good wishes of the Department of Agriculture and Technical Instruction for Ireland, under which the work of the Survey is now carried on. It is pleasant to remember that two of the pioneers of geological mapping in Ireland, the Rev. G. V. Sampson and Sir R. J. Griffith, were elected Honorary Members by the Geological Society of London as early as 1808. The successive Directors of the Irish Geological Survey have been Fellows of that Society, and have been continuously stimulated in their researches by association with its members throughout the British Isles. J. Beete Jukes, while producing for the Geological Survey in rapid succession a series of Memoirs on Waterford, Cork, and Kerry, sent his remarkable paper on River-Development in the South of Ireland to the Geological Society of London, regarding the Society's 'Proceedings' as the proper medium for the dissemination of his views. Whether we look back to the fine old series of 'Transactions' containing the work of Buckland, Conybeare, Weaver, and Berger, or turn the pages of the 'Quarterly Journal' to welcome the help of living Authors, we find the Fellows of the Geological Society of London again and again elucidating the difficulties with which the Irish Survey has to deal. The hundred years of progress that are commemorated to-day form a happy augury for future co-operation and for that continued interchange of ideas which is the very life-blood of research. The Geological Survey of Ireland wishes continued prosperity to the Geological Society of London.

26. IX. 1907.

GRENVILLE A. J. COLE.
ALEX. MCHENRY.
JAS. R. KILROE.
R. CLARK.
SIDNEY B. WILKINSON.
HENRY J. SEYMOUR.
M. W. GAVIN.

Mr. A. B. KEMPE, who represented the Royal Society, speaking as the mouthpiece of the Delegates of the various Learned Societies of Great Britain, conveyed to the Geological Society their hearty congratulations on its having attained the hundredth anniversary of its foundation. They called to mind the history of the Society, the long roll of distinguished geologists who had been instrumental in building up its fame, and the eminent services which the Fellows had enabled the Society to exercise in advancing natural knowledge; and they were proud to be associated with the throng of distinguished Delegates, Foreign and Colonial, who were present, in doing the Society honour.

The following Addresses from Learned Societies were presented :—

THE ROYAL SOCIETY.

THE Royal Society cannot neglect the opportunity to send cordial congratulations to the Geological Society of London on the completion of a hundred years of independent scientific activity. It is recalled that a century ago the geologists, finding the home of the parent Society too narrow for their special activities, swarmed off from the Royal Society to form an independent organisation of their own, and thereby established a precedent for subsequent swarms of workers in the other sciences. The Royal Society is glad to remember that, although the special researches of geologists have appeared since that time mainly in their own collections, yet their influence and active collaboration in wider fields have never been wanting in the parent Society. Without the great names whose special activities were bound up with the Geological Society, Buckland, Lyell, Murchison, Prestwich, Ramsay, Sedgwick, and others too numerous to mention, even including Darwin himself, the record of the Royal Society would be far poorer than it is. Trained by intimate contact with nature on the remote moor and mountain-side, these men infused prominently into English scientific affairs a vigorous and breezy atmosphere consonant with their own open-air problems and discussions.

The geologists were pioneers in the application of the historical method to the records of the past. The Royal Society is glad to recall that in geological science the pioneers were the Geological Society of London, whose institutions have formed the model for the foundation of many sister Societies strenuously engaged in the geological exploration of all parts of the world.

For these reasons, and also as touching most intimately her own status and prosperity, the Royal Society very ardently desires for the Geological Society of London a career in the future equally prolific in great discoveries and in deep insight into the remote history and evolution of the world.

RAYLEIGH, President.

THE ROYAL SOCIETY OF EDINBURGH.

THE Council of the Royal Society of Edinburgh offer their cordial congratulations to the Geological Society of London on the occasion of its Centenary celebration.

They recognise with pleasure the paramount influence which it exercised at the beginning of last century in placing geological research on right lines, and the impetus which it gave to original investigation, thereby leading to the foundation of similar societies in other lands.

It is a source of extreme gratification to them to recall the

valuable aid which was rendered to the Society in its early days by illustrious Scotsmen, and to note the roll of distinguished Presidents from the north of the Border, whose researches have helped in no small measure to build up its enduring reputation.

The past career of the Society has been one of uninterrupted success, and the Council earnestly hope that it may long continue to exercise a powerful influence in the development of the Science of Geology.

KELVIN, President.

G. CHRYSTAL, Secretary.

JAMES GEIKIE, Professor of Geology,
Edinburgh University. Delegate.

23rd August, 1907.

THE ROYAL IRISH ACADEMY.

THE Royal Irish Academy cordially joins with the other representatives of science and learning at home and abroad in congratulations to the Geological Society of London on the completion of the first century of the Society's existence.

In offering its sincerest good wishes the Academy feels itself associated with the Society not merely by the sympathy of a common aim—the advance of scientific knowledge—but in virtue of the many personal links by which the two bodies have been associated from the very beginning. In the year of its foundation the Geological Society elected Kirwan—then President of the Academy—to be one of its first Honorary Members; and subsequently other Members of the Society, such as Murchison and Huxley, were Honorary Members of the Academy; while Oldham, Haughton, Beete-Jukes, and Maxwell Close, as active Members both of the Academy and the Society, have contributed to the knowledge of Irish Geology and to the solution of geological problems of world-wide importance.

As the Society dates its existence from the very commencement of the scientific study of Geology, its publications constitute a peculiar and notable record of the steady advance of knowledge within the sphere of its activity, and of the improvements in methods of scientific investigation; and the Academy earnestly hopes that the Geological Society's success in the past century may be but a foreshadowing of vastly greater progress in the time to come.

FRANCIS A. TARLETON, President of the Academy.

J. A. McCLELLAND, Secretary of the Academy.

Dublin, September 1907.

THE LINNEAN SOCIETY.

THE Linnean Society of London, in conveying its hearty congratulations to the Geological Society of London on the completion of the Hundredth Year of its activity, desires to associate itself with the rest of the scientific world in expressing appreciation of the results achieved since its foundation by a distinguished body of workers, whose labours have enriched the common stock of knowledge and have added to the reputation of British investigators.

The progress of Science has rendered segregation necessary, but certain common pursuits unite the two Societies, as in the domain of Palæontology and especially Palæobotany.

The Linnean Society must ever cherish the memory of the great naturalist after whom it is named, and the attempts of Carl von Linné to explain the phenomena of Geology display his keen observation and ingenuity of intellect, whilst the Arms of the Society remain a pledge of its interest in Geology from the early period of its existence to the present day.

That the Geological Society may flourish in the future, as it has flourished in the past, and that its illustrious record may be still further enhanced, is the sincere desire of those whose names are underwritten on behalf of the Linnean Society, and its Common Seal appended.

W. A. HERDMAN, President.

D. H. SCOTT,
B. DAYDON JACKSON, } Secretaries.

THE ROYAL PHYSICAL SOCIETY OF EDINBURGH.

THE Council of the Royal Physical Society of Edinburgh have great pleasure in accepting the invitation to send a delegate to the Centenary Celebration of the Geological Society of London.

They appreciate highly the powerful influence which it has exerted in stimulating geological investigation both at home and abroad. Its publications are of the highest value to all students of research, and embrace numerous papers in different branches of geology which have had a permanent influence in the development of the science.

Its roll of members includes all geologists of note in the British Empire, and it has proved its cosmopolitan character by conferring its highest awards on distinguished investigators of other nationalities.

They cordially express the hope that great success may attend the Society in the future as in the past.

JOHN HORNE, LL.D., F.R.S., Delegate.

26th September, 1907.

THE ROYAL DUBLIN SOCIETY.

IN offering hearty congratulations to the Geological Society of London on the occasion of its Hundredth Anniversary, the Royal Dublin Society would gladly make acknowledgment of the debt which the study of Irish Geology owes to the great English Society. Early in the century Weaver's work on the Geology of South-Eastern Ireland was given to the world by the Geological Society. In some respects this work did for Ireland what Macculloch's did for the Western Isles of Scotland. This was but a beginning. The study of Irish Geology may be pursued in every volume issued by the Geological Society, and during the continuance of the Royal Geological Society of Ireland that body worked in close sympathy with the Geological Society of London, the most distinguished members of the former claiming membership in the latter.

Within recent years there appears to be arising a closer union between Geological and Physical Science. In the new paths which are now opening up the Geologist and the Physicist will, we believe, ever work more and more together. This union of the Sciences, everywhere progressing, requires none the less the work of the specialist. It only seeks such a catholicity of interests as will enable the new Science to share that inspiration which is begotten of a great past.

The day of Science has assuredly not yet reached noontide. We have seen in the hundred years which now close a glorious morning. William Smith's fundamental work marked its opening years, and within its compass lived and died Lyell, Murchison, Huxley, and Darwin, while some whose work is epoch-marking are still amongst us.

That the Institutions of Man should share the duration of Geological Epochs is perhaps beyond our dreams, but we may hope that Science, whose strength increases with the length of its reign, will survive so long as Man survives. If this be so, the light which now dazzles our eyes is perhaps no more than those streaks which appear as the beginning of day.

It is our hope and our faith that far into the full noonday—we do not wish to look beyond—the Geological Society of London may still be active in its noble work for Science.

J. JOLY,	} Honorary
LEWIS RIALI,	

Leinster House, Dublin, 20th June, 1907.

THE CHEMICAL SOCIETY.

IN the name of the Chemical Society we welcome the present opportunity of offering our warmest congratulations to the President, Council, and Fellows of the Geological Society of London on the occasion of its Centenary Celebration.

It is impossible to overestimate the value of the great work which

your Society has accomplished during the past hundred years, both in laying the solid foundations of a new Science and in helping to raise on these foundations the stately edifice of Modern Geology.

The connexion between Geology and Chemistry has always been, and must ever remain, a very intimate one, and the early history of your Society shows that Chemists a hundred years ago fully recognised that their special branch of Natural Knowledge was destined to play an important part in elucidating those changes in the structure of the Earth which fall within the special province of the Geologist.

This association between the two Societies is brought into further prominence by the fact that amongst the thirteen original founders of your Society we find the names of no less than five celebrated Chemists, viz. :—Arthur Aikin, William Allen, Humphry Davy, W. A. Pepys, and Richard Phillips; whilst within the first few years of your corporate existence the Roll of your Fellows includes the names of Thomas Thompson, William T. Brande, Edward Turner, James Hall, W. H. Wollaston, J. F. Daniell, Charles G. Daubeny, and Alexander J. Marcet.

The advances in modern Petrology, a sub-section of Geology which may be said to have been initiated by your Society, have demanded a still closer union between our respective branches of Science, and in the new ideas introduced within the last decade by the discovery of Radio-Activity, we see further indications that Physical Chemistry in the near future must influence many of the fundamental doctrines bearing on the age of the Earth and on the various changes which the Earth has undergone within the period embraced by Geology.

WILLIAM RAMSAY, President.

ALEXANDER SCOTT, Treasurer.

M. O. FORSTER, } Honorary
ARTHUR W. CROSSLEY, } Secretaries.

HORACE T. BROWN, Foreign Secretary.

THE ROYAL INSTITUTION OF GREAT BRITAIN.

THE Royal Institution of Great Britain desires to offer to the Geological Society of London cordial congratulations on the occasion of the celebration of its Centenary.

The Members of the Royal Institution appreciate and honour the great work accomplished by the Geological Society, and revere the names of the many distinguished Fellows, who, in the past, by their investigations and writings, have rendered such signal services to the cause of Geological Science.

It is the earnest wish of the Royal Institution that the Geological Society may continue to prosper in the century to come, and that Science may be still further enriched by its valuable contributions to our knowledge of the material structure of our globe.

NORTHUMBERLAND, President.

THE RAY SOCIETY.

THE Ray Society desires to congratulate the Geological Society of London on the completion of the hundredth year of an existence of continuous usefulness and unbroken prosperity. As the pioneer of all societies for the diffusion of geological knowledge, the Geological Society of London has worthily set an example in its constitution and methods of procedure which has been followed with advantage by similar societies throughout the world, and its published proceedings form a storehouse of information on geology, especially on the geological structure of the British Isles, of inestimable value.

As the study of rocks requires a knowledge of chemistry, so that of fossils can only be followed with success by those who have a thorough knowledge of the existing animals or plants whose representatives are found in our rocks, and it is herein that the Ray Society may venture to express the hope that, in some of the zoological and botanical works which it has published during the last sixty-three years, it may have afforded help to palaeontologists.

That the two societies are of a kindred nature in their endeavours to advance our knowledge of life on the earth—the one in the past, the other in the present—has long been recognised by the Geological Society in permitting the Ray Society to hold meetings in its Council Room, a courtesy highly appreciated.

May the Geological Society continue to flourish, and in the future add to the lustre which it has attained in the past!

AVEBURY, President.

JOHN HOPKINSON, Secretary.

THE ROYAL GEOGRAPHICAL SOCIETY.

As representing the Council of the Royal Geographical Society I desire to convey to you our sincere and hearty congratulations on the occasion of the celebration of the centenary of the foundation of the Geological Society. So far as their fields of work are concerned the two Societies have much in common, and at least two distinguished names are intimately connected with the foundation and progress of both, Greenough and Murchison. But these are only two of the long series of distinguished men under whose guidance your Society has prospered, and has also rendered invaluable services to the science which it cultivates. Largely through its efforts Geology may be said to have been revolutionised during the past century: it has initiated and developed methods and lines of investigation which have been abundantly fruitful of results in a knowledge of the structure and evolution of our earth.

We, as Geographers, acknowledge our indebtedness to the results thus achieved, and have every reason to wish the Geological Society as successful a career in the future as it has had in the past.

GEORGE TAUBMAN-GOLDIE, President.

London, September 26th, 1907.

THE ROYAL SCOTTISH GEOGRAPHICAL SOCIETY.

THE Council of the Royal Scottish Geographical Society offer their cordial congratulations to the Geological Society of London on the completion of the hundredth year of its strenuous and fruitful career.

They recognise with admiration the large part its Fellows have played in the development of Earth-knowledge, and salute the Society as the mother of all similar institutions throughout the world.

In the long roll of its membership it has included the name of every geologist of note in the wide British Empire. Nor has it been slow to acknowledge the supreme value of the work done by fellow-labourers elsewhere, but from year to year has gladly added to its honorary membership many of the most illustrious geologists and geographers of other nations.

That a Society which has so greatly enriched the literature of Science, and in so many ways advanced the study of Earth-knowledge, may continue to flourish, is the earnest prayer of the Council.

JAMES GEIKIE, President.

RALPH RICHARDSON, } Honorary
J. E. BARTHOLOMEW, } Secretaries.

31st July, 1907.

THE MINERALOGICAL SOCIETY.

IN offering to the Geological Society of London an address of congratulation upon a century of existence rich in scientific activity, the Mineralogical Society is not unmindful of the debt of gratitude which Mineralogy owes to the Geological Society. Several of the founders of the Geological Society had previously initiated the first British Society of Mineralogy, and the work of the Geological Society for several years was mainly in the field of Mineralogical Research; in fact, the principal object for which the Society was instituted was the advancement of Geological Science 'as connected with the Mineral History of the British Isles.'

During the latter half of the nineteenth century other aspects of Geology so occupied the attention of the Society that, except in the field of Petrology, Mineralogical investigation has been less pursued by its Fellows. But the Society has always encouraged Mineralogists and welcomed their work. This encouragement has been extended in a very special manner to the Mineralogical Society of Great Britain and Ireland, which for the last eighteen years has enjoyed the kindly hospitality of the Geological Society, and has been allowed to hold its meetings in the apartments at Burlington House.

It is therefore with feelings of deep gratitude that the Mineralogical Society offers its congratulations to the Geological Society

upon the brilliant career which it has pursued during the last hundred years, and expresses the hope that the Society may long continue to flourish and to labour successfully in the promotion of Geological and Mineralogical Science.

HENRY A. MIERS, President.

September 25th, 1907.

THE GEOLOGISTS' ASSOCIATION, LONDON.

WE, the Members of the Geologists' Association, desire to offer our most cordial congratulations to the President, Council, and Fellows of the Geological Society of London on the completion of the Hundredth Year of the existence of the distinguished Society to which you belong.

We recall with pride and admiration the stand made by the Society during the early years of its existence, which resulted in securing for Geology an independent position among the Sciences, and we recognise with gratitude that while at that time the Society refused to accept a subordinate position, so in after years those who directed its counsels never set themselves against the formation of other bodies proposing to investigate the same science.

Thus it comes about that there are to-day a large number of Societies in this Country, the Colonies, and Abroad, our own Association being one of them, whose aim is the study of Geology, and who now unite in doing homage to the Geological Society of London as to the mother of them all. It is our sincere hope that your great Society may long continue to flourish, and that there may never be wanting in the future a train of worthy successors to that long line of distinguished men whose names have adorned your roll of Fellows in the past, the one object of whose scientific work has been the Elucidation of the Truth.

ROBERT S. HERRIES, President.

GEORGE W. YOUNG, }
ALFRED C. YOUNG, } Secretaries.

September 26th, 1907.

THE ROYAL ANTHROPOLOGICAL INSTITUTE.

THE Royal Anthropological Institute of Great Britain and Ireland has the honour of associating itself with the Universities and other learned Societies in offering its greeting to the Geological Society of London on the celebration of its centenary in 1907.

The Royal Anthropological Institute, having for its object the study of Man in the widest sense, is deeply indebted to the work of the Geological Society in establishing the History of the Earth on a strictly inductive basis, and for making it possible to deal with Man outside and beyond history, in due order and sequence, and in his proper surroundings. The later geological periods were defined

during the latter half of the nineteenth century. Had they not been defined, it would have been impossible for the story of mankind to have reached its present limit, immeasurably beyond the written record, or for the evolution of Man in time to be adequately considered. In this region of enquiry the Royal Anthropological Institute and the Geological Society are closely linked together, and have common ground.

The Institute sends its congratulations through Professor Boyd Dawkins, and feels sure that the Geological Society will continue its work in adding to knowledge, and in giving students of Anthropology an ever lengthening and widening view of primeval Man.

D. J. CUNNINGHAM, President.

T. ATHOL JOYCE, Secretary.

THE IRON AND STEEL INSTITUTE.

WE, the President, Council, and Members of the Iron and Steel Institute, desire to offer hearty congratulations upon the completion of the hundredth year of the existence of your Society.

We warmly appreciate the value of the scientific work of your members during the past hundred years, and recognise the world-wide reputation attained by your Society, whose future will, we trust, be as brilliant as its past.

The Iron and Steel Institute has counted among its past Presidents two Fellows of the Geological Society, the Duke of Devonshire and Dr. Percy. The 'Transactions' of the Iron and Steel Institute have been enriched by communications from David Forbes, James Geikie, Sir Warrington Smyth, H. Bauerman, A. Strahan, H. W. Hughes, and other eminent Fellows of the Geological Society, and we take this opportunity to express the hope that the spirit of co-operation which has so long animated the members of the two Societies may continue, and thus promote the extension of the knowledge of the world's mineral resources.

HUGH BELL, President.

BENNETT H. BROUGH, Secretary.

September 1st, 1907.

THE INSTITUTION OF MINING AND METALLURGY.

Mr. C. J. ALFORD, Delegate, addressed the President on behalf of the Institution of Mining and Metallurgy, and presented to him the Gold Medal of the Institution, as also the following Address:—

THE Council of the Institution of Mining and Metallurgy desire to offer cordial congratulations to the Geological Society of London on the occasion of the celebration of its centenary, and to give expression to their sense of the indebtedness of the scientific world and of the industries with which the Institution is concerned, for

the pre-eminent services of the Society in the advancement of Geological Science.

The Council have had great pleasure in awarding the Gold Medal of the Institution to Sir Archibald Geikie, K.C.B., D.C.L., F.R.S., President of the Society during the centennial year of its foundation, in recognition of his distinguished services to the Science of Geology, and they trust that the cordial relationship happily subsisting between the two Societies may long continue, and that the Geological Society may enter upon its new century with renewed vigour and usefulness.

W. GOWLAND, President.

C. McDERMID, Secretary.

London, September 25th, 1907.

THE INSTITUTION OF MINING ENGINEERS.

THE Institution of Mining Engineers send hearty greetings and sincere congratulations to the Geological Society of London on the occasion of the celebration of its first centenary, and their warmest wishes for its further prosperity.

The Geological Society has attained, during the first hundred years of its existence, a prominent position among kindred Institutions, and it is the ambition of all eminent mining engineers to become Fellows of your illustrious Society.

The Geological Society and the Institution of Mining Engineers are always united in promoting increased knowledge of Geology and in widening its applications for the service of Man.

The researches of the Geological Society have in many ways proved beneficial to those engaged in mining, and the Institution of Mining Engineers is under a continued debt of gratitude to the Society for the dissemination of valuable information in its 'Quarterly Journal' on the scientific and practical applications of Geology in remote and little-known districts.

The practical operations of the mining engineer afford material aid to the geologist in scientific and technical researches, and the Institution of Mining Engineers trusts that this mutual co-operation and dependence may be long continued.

The Institution of Mining Engineers is also especially indebted to the Geological Society for the use of commodious and convenient rooms for its meetings, and for the many kind and courteous attentions freely accorded by the Society's officials.

It is the earnest desire of the Institution of Mining Engineers that the Geological Society may be as enduring as the foundations of the science which it promotes, and may with ever-increasing success continue the good work that it has performed during the past hundred years for the future benefit of Man.

M. DEACON, President.

M. WALTON BROWN, Secretary.

August 23rd, 1907.

THE NORTH OF ENGLAND INSTITUTE OF MINING AND MECHANICAL
ENGINEERS.

To Sir Archibald Geikie, Sc.D., D.C.L., LL.D., Sec.R.S., F.R.S.E.,
President of the Geological Society of London.

WE, the President, Council, and Members of the North of England Institute of Mining and Mechanical Engineers, gladly seize this opportunity of tendering to you, as representing the Geological Society of London, our cordial congratulations on the occasion of the hundredth anniversary of its foundation.

In doing so, we wish to recognise the material help which the Geological Society has ever afforded in guiding the prospector in his explorations and in opening new fields to the miner. To its Publications we have turned times out of number—and seldom in vain—for the information which we lacked as to little-known parts of the world, and for the elucidation of those laws of Pure Geology which might be applied by us in our professional pursuits.

To your courtesy also, and to that of the officials of your Society, we owe frequent and ungrudging hospitality when in London.

But if it be our pleasure at such a time as this to acknowledge the indebtedness of our Institute to your Society, it may also, perhaps, be permitted to us to claim that we, in our turn, have from time to time had it in our power to assist the progress of your great science—on which our practice is so largely based—by unveiling aspects of underground nature which, without our shafts, our borings, and our drifts, might have remained concealed and unrecorded for ever.

We trust that in this the second century which your Society is now entering, the same happy co-operation may endure undiminished and prove no less fruitful than in the past.

JOHN H. MERIVALE, President.

M. WALTON BROWN, Secretary.

Newcastle, July 20th, 1907.

THE EDINBURGH GEOLOGICAL SOCIETY.

THE Council of the Edinburgh Geological Society has the honour to offer its hearty congratulations on the auspicious occasion of your Society celebrating its Centenary. In doing so, it would take the opportunity of expressing its feeling of indebtedness to your Society for its great services to Geology during the past hundred years, services which have not merely led to the advancement of the Science itself, but also have given the Metropolitan Society of the British Empire a foremost place among the Geological Societies of the world.

The countrymen of Hutton and Playfair salute you as carrying nobly forward the work and principles which are connected with

the names of these illustrious men, and to promote which the Edinburgh Geological Society was founded in 1834.

It is peculiarly fitting that that Society should convey to you its congratulations and best wishes at this time, seeing that the distinguished Geologist who occupies the Presidential chair of your Society was formerly President of the Edinburgh Geological Society and the first occupant of the Chair of Geology in the University of Edinburgh.

RALPH RICHARDSON, President.

DAVID GLOAG, Honorary Secretary.

September 1907.

THE GLASGOW GEOLOGICAL SOCIETY.

THE Council of the Glasgow Geological Society feel honoured by being invited to send a delegate to the Centenary Celebration of the Geological Society of London.

They regard with admiration the powerful influence which it has exercised in the development of the Science of Geology both at home and abroad, and they cordially appreciate the zeal and enthusiasm with which it has inspired investigators throughout the British Empire.

The long series of publications emanating from the Society have proved a valuable stimulus to smaller geological societies in the pursuit of earth-knowledge, and in noting many important local details which otherwise might pass unrecorded.

They recognise with pleasure the prominent part which Scotsmen have played in securing the great success of the Society, partly by means of their researches and partly by sharing in the administrative duties.

While offering their cordial congratulations on this auspicious occasion, the Council express the hope that the Society will continue to enjoy uninterrupted success and prosperity.

BEN. N. PEACH, President.

PETER MACNAIR, } Secretaries.
FREDERICK MORT, }

THE YORKSHIRE GEOLOGICAL SOCIETY.

THE Members of the Yorkshire Geological Society (founded in 1837 as the Geological and Polytechnic Society of the West Riding of Yorkshire) beg to present their sincere and hearty congratulations on the attainment of the centenary anniversary of your Society.

It is with much satisfaction that they recall the names of not a few Yorkshiremen who have held high positions amongst the Officers and Council of your Society, and they gladly recognise how great and varied have been the services rendered to Yorkshire

Geology by past and present distinguished members of your fellowship.

They desire to offer you their sincere thanks for the constant stimulus and help which your Society has afforded to local Geological Societies, and the generous way in which local workers have received recognition at your hands.

They would, further, express their sense of the great services rendered to the science of Geology by your Society during the whole period of its existence, and acknowledge the lasting benefits which the labours and researches of your Members have conferred on Geologists all over the world.

They greatly appreciate the sound judgment which has ever characterised the management of your affairs, your ready welcome to all earnest workers, and your generous encouragement of all effort sincerely designed to advance geological knowledge.

RIPON, President.

J. H. HOWARTH, Hon. Secretary.

THE YORKSHIRE PHILOSOPHICAL SOCIETY.

As one of the oldest Geological Societies in the country, founded at a time when scientific studies were generally unrecognised, and as the Custodian of the Museum where the objects preserved in the Kirkdale Cave, the earliest bone-cave to be scientifically explored, are preserved, where Phillips was Keeper, where many of his type-specimens still exist, and where the first meeting of the British Association was held, the Yorkshire Philosophical Society ventures to offer its congratulations to the Geological Society on its Centenary meeting, and to express its best wishes for the future.

TEMPEST ANDERSON, President.

C. E. ELMHIRST, Hon. Secretary.

The Museum, York, September 26th, 1907.

THE MANCHESTER GEOLOGICAL AND MINING SOCIETY.

THE Council of the Geological and Mining Society of Manchester sends its cordial congratulations to the Geological Society of London on the celebration of its Centenary, with the added pleasure of the two Societies being linked together, not only by common aims but by a family bond.

The Geological Society of London, founded in 1807 for the advancement of the knowledge of the earth, received its charter in 1825, and exerted from the first a profound influence on the scientific thinkers of the day, and nowhere else with greater effect

than in the North of England. Here it made itself felt in the establishment of the Geological Society of Manchester in 1838 by Lord Francis Egerton, Sir Philip Egerton, James Heywood, E. W. Binney, Sir William Fairburn, Dr. Black, the two Ormerods, and others who form links uniting the two Societies together, Dr. Dalton being our first Honorary Member. Since that time the two Societies have worked together in the ever-enlarging field of geological research. The extent to which this has taken place is shown by the number of Fellows of the Geological Society of London in our list of Members for the present year, amounting to thirty-six.

For these reasons the Geological and Mining Society of Manchester, recognising their filial relation to the Parent Society, have appointed Professor Boyd Dawkins, F.R.S., their Delegate, to convey their sentiments, and their belief that the great work in general education done in the past by the Geological Society of London will be carried on with unabated energy in the future.

CHARLES PILKINGTON, President.

SYDNEY A. SMITH, Honorary Secretary.

Manchester, 30th July, 1907.

THE LIVERPOOL GEOLOGICAL SOCIETY.

THE Members of the Liverpool Geological Society desire to convey their warmest congratulations to your Society on the occasion of the hundredth anniversary of your foundation.

As a daughter Society, which hopes to celebrate its own Jubilee in 1909, we approach the great Mother Society with sincere gratitude for the kindly guidance and encouragement which it has at all times so willingly given.

We recall with pride that four of our Past Presidents have received recognition from your Council in the form of Medals and Grants of Funds. The bestowal of these honours has acted as a stimulus, not only to the recipients but to all our Members.

We feel it would be impossible to overestimate the great part which your Society has played in the marvellous developments that have taken place in geological thought during the past hundred years. Your Society has ever extended a guiding hand to all who have earnestly laboured to discover and record geological truths both at home and abroad.

It is our most earnest wish that the distinguished past may be the precursor of a long, happy, and even more useful future.

ARTHUR R. DWERRYHOUSE, President.

W. A. WHITEHEAD, Hon. Secretary.

The Royal Institution, Liverpool.

THE LEEDS GEOLOGICAL ASSOCIATION.

THE Council and Members of the Leeds Geological Association beg to offer their congratulations to the Geological Society of London on the completion of the hundredth year of its existence.

In so doing, it is their wish to record their high appreciation of the work done by the Society, not only in the encouragement of the study of the Geological Structure and History of the British Isles, but also of the inestimable benefits it has conferred upon our science, by stimulating workers in those more general fields of research, lying on the borderland between Geology and other branches of Science, whose investigations have had such a profound influence upon the progress of Geology.

Gathering together a band of enthusiasts in the days of the infancy of Geological Science, enthusiasts whose keen insight into the workings of Nature has never been surpassed, the Geological Society may be said not only to have laid the foundations of the study of Geology in our Islands, but to have been the mainspring of geological enterprise in those early days throughout the world.

The example set by the founders of the Geological Society has been most fruitful in the formation of many daughter Associations throughout the Empire, whose part of encouraging local workers is second only to that played by the parent society in its importance to the Science and to the community.

For the future we wish the Society a continuance of the prosperity and usefulness which it has enjoyed hitherto, and we feel that the future of the Science we love could not be in better hands than of those who, through the agency of the Geological Society of London, now control its destinies in these Islands.

F. W. BRANSON, President.

ARTHUR R. DWERRYHOUSE, Vice-President.

E. HAWKESWORTH, Hon. Secretary.

Leeds, September 1907.

THE HULL GEOLOGICAL SOCIETY.

THE President and Council of the Hull Geological Society beg to offer their congratulations to the London Geological Society on its attaining the Hundredth Anniversary of its foundation, and on the success attending its work, as proved by the concurrent great advancement in geological knowledge.

The Hull Society also takes this opportunity of gratefully acknowledging its indebtedness in many ways to the parent Society.

T. SHEPPARD, President.

JNO. W. STATHER.	} Honorary
WM. HASTINGS CROFTS,	
	Secretaries.

Hull, September 26th, 1907.

THE DUBLIN NATURALISTS' FIELD-CLUB.

THE President, Vice-President, and Members of the Dublin Naturalists' Field-Club beg to offer their most respectful congratulations to the Geological Society of London on the occasion of the celebration of its Centenary.

For the unwearied and successful efforts of the Geological Society during the past century in the advancement of Geological Science the President, Vice-President, and Members beg to express their most profound gratitude.

The President, Vice-President, and Members of the Dublin Naturalists' Field-Club hope that the future of the Geological Society will be as brilliant and fruitful as the first century of its existence has been.

C. B. MOFFAT, President.

J. DE W. HINCH, } Secretaries.
F. O'B. ELLISON, }

Dublin, September 1907.

The orderliness and success of the Reception were largely due to the organisation and thoughtfulness of the Stewards, who were also good enough to act in the same capacity at the Afternoon Meeting, held likewise at the Institution of Civil Engineers. The same seating arrangements were made for that Meeting. The Stewards were Dr. C. Gilbert Cullis, Dr. A. Morley Davies, Mr. W. G. Fearnside, Dr. T. T. Groom, Mr. R. F. Gwinnell, Mr. J. Allen Howe, Dr. G. T. Prior, and Dr. Ivor Thomas.

CHAPTER IV.

THE PRESIDENTIAL ADDRESS.

THURSDAY, SEPTEMBER 26TH, 1907.

AT 3 P.M. Visitors and Fellows again assembled at the Institution of Civil Engineers to hear an address by the President, who chose for his subject The State of Geology at the Time of the Foundation of the Geological Society.

ADDRESS OF THE PRESIDENT,

SIR ARCHIBALD GEIKIE, K.C.B., D.C.L., Sc.D., LL.D., Sec.R.S.

THE Geological Society of London, which meets to-day to celebrate its hundredth anniversary, desires to express the deep gratification with which it welcomes the large and distinguished company of guests who have accepted its invitation to this festival, and have come not only from all parts of our own islands, but from almost all corners of the globe. No more signal proof of the real brotherhood of science could be desired than is offered by the present assembly. Nor could more striking evidence be given that Geology, which as a recognized branch of science is not much older than the Geological Society itself, now flourishes in every civilized country. We rejoice to see here delegates from some of the most venerable universities and academies on the Continent of Europe, from many of the younger but not less active colleges and learned societies of North and South America, from the scientific institutions which in recent years have been created in the north and south of Africa, and from those of Asia, including the youngest Asiatic University which has sprung into such vigorous growth in Japan. The presence here of representatives of the universities, colleges, learned societies, museums, engineering and mining institutions of our own country and of our colonies and dependencies likewise affords us a peculiar pleasure.

In choosing a subject on which to address so cosmopolitan a company, I have thought that it might be of some interest, on the

present commemorative occasion, for a brief space of time, to cast our eyes backward across the intervening years to the beginning of last century, with the view of attempting to picture to ourselves what was then the state of knowledge regarding the structure and history of the earth, and to try to realise amidst what a conflict of opinions this Society had its birth. Such an historical retrospect may form an appropriate prelude to the story of the rise and progress of the Society, so fully told by Mr. H. B. Woodward in the volume which has been prepared for this Centenary.

For many previous centuries the subject of the history of our globe had chiefly engaged the attention of the Cosmogonists, who being, in too many cases, not men of science, and having the narrowest basis of observation on which to build, could freely indulge in the wildest speculations. Nowhere did these flights of the human imagination reach a greater extravagance than in England. The writings of Burnet, Whiston, and others remain as memorable examples of the vagaries of cosmological ingenuity. Yet, even when these writers lived, enough was known of the facts of Nature to have kept their speculations within more modest limits, and the amount of knowledge on the subject was constantly increasing. Some of the more obvious facts had engaged attention even in the infancy of mankind, and the just conclusion had been eventually drawn from them that the world must have undergone many revolutions before its surface took the shape which it now wears. When, in the Middle Ages, this obvious inference led to the further deduction that the world must be vastly older than was commonly believed, the observers who were leading the way in this investigation found themselves confronted by the threatened thunders of the Church, for holding and promulgating an opinion contrary to Divine Revelation. Heresy in any form has always been unpopular as well as dangerous, and thus ecclesiastical dogma for a time arrested the progress of enquiry. Some writers who honestly sought to reconcile the teaching of the Church with the facts of Nature, endeavoured to shorten the time which these facts appeared to demand, by supposing that the vast mass of the fossiliferous formations in the earth's crust might have been deposited during Noah's Flood. This explanation, though ludicrously unscientific, had the merit of being at least not unorthodox, and those who espoused it might carry on their researches without fear of awakening ecclesiastical susceptibilities.

By the end of the eighteenth century the hand of the Church had greatly relaxed its hold, though the influence of long centuries

of dogmatic teaching still swayed the popular mind. Yet men were beginning to feel themselves free to follow up their examination of the earth's surface by, sometimes timidly, sometimes more boldly, drawing the conclusions to which their researches seemed naturally to point. It is one of the intellectual glories of France to have led the way in this emancipated quest. Guettard, by his life-long studies of the rocks and their fossils, showed how varied is the light which they cast on the history of the earth. Buffon, in his ever-memorable '*Époques de la Nature*,' traced in broad and vivid outline what he conceived to have been the successive stages of that history, and although his views have been superseded by the results of more extended and detailed study, there can be no doubt that during the last half of the eighteenth century his glowing pages did much to arouse fresh interest in this field of enquiry. Increased attention was given to minerals and rocks, which were now collected, not merely as objects of beauty or curiosity, but as parts of the framework of the globe, and records of the manner in which that framework had been built up. Organic remains no longer appeared to be mere '*sports of nature*,' or memorials of the Deluge, but relics of plants and animals that had once successively lived on the earth.

Among the causes which at that time contributed to greater zeal of investigation, one may be recognised in the expeditions fitted out in the year 1769 for the observation of the transit of Venus. England, in organising the first voyage of Captain Cook, began a series of circumnavigations which vastly increased the knowledge of the geography and natural history of the globe. Russia, by planning the great survey of her empire under Pallas, provided an ample store of fresh information regarding the structure and surface of the land. While these expeditions directly enriched science by the materials which they collected, they perhaps did even more service by quickening the public interest in the natural history of the earth, and by stimulating the love of travel which was of such paramount importance for the advancement of an observational science like geology. The illustrious example of Pallas was soon followed in Switzerland by that of Benedict de Saussure, who, by his prolonged and enthusiastic studies of the Alps, opened up the mountain-world to the intelligent appreciation of mankind. His name has long been enrolled among those of the early pioneers to whom geologists feel most deeply indebted. The love of scientific travel continued to grow with each successive generation, until at

the opening of last century it found its greatest example in Alexander von Humboldt. These illustrious men, together with a few of their contemporaries, lifted the study of rocks and their problems to a higher platform of enquiry, and gave to that study a breadth of outlook and a scientific spirit which it had never known before.

It has been said that the geologist ought never to forget that the mineralogist was his father. The study of minerals certainly preceded that of rocks, and it should always be remembered that the early mineralogists were in reality the first geologists, by whom the foundations of the petrographical division of geology were laid. But if the geologist is to own the mineralogist as his father, he must surely acknowledge the miner to be his grandfather. For many centuries, and long before the rise of scientific mineralogy, most of the current knowledge of the nature and disposition of the minerals and rocks of the earth's crust sprang out of the labours of those engaged in mining operations. It was the business of these men to make themselves practically acquainted with the subject, so far, at least, as regarded the facts that had to be attended to in the sinking and working of mines. As a rule, however, they did not trouble themselves with explanations or speculations as to the origin of the rocks with which they had to deal, and when they did so, they usually attained to no greater measure of success than other theorists before them. But when miners established mining schools for the training of those who were to follow their craft, they took an important forward step in paving the way for the creation of a sound geology. It is not perhaps always or fully recognized by geologists how much their science owes to these mining institutions, which, though at first designed merely for the instruction of the practical miner, eventually developed into admirable training colleges for the practical geologist—a function which they have continued to fulfil with ever-increasing efficiency up to the present time.

One of these mining schools was unquestionably the source of a large part of the remarkable vigour with which the study of rocks was pursued all over Europe towards the close of the eighteenth and in the early decades of the nineteenth century. The Bergakademie of Freiberg in Saxony, established in 1765 for the training of the mining community of that metalliferous district, gave at first no promise of more than the local usefulness for which it was designed. But the genius of Werner, who, a few years after its

establishment, was appointed teacher of mining and mineralogy in the young institution, rapidly transformed it into the most famous geological centre in the world. The brilliance and eloquence of his lectures and the charm of his personal character attracted to the little Saxon town a yearly growing crowd of students, anxious to learn the principles of the science of the rocks which he expounded. There can be no doubt that at the height of his fame Werner was the greatest force in the geological world of his day, and that it was in large measure out of the unwonted interest created by him in the subject, and the discussions which consequently arose, that geology first took definite shape as a branch of natural science. Werner himself wrote little. It was not therefore by his publications that he obtained the commanding position which for so many years he held in Europe, and that his followers were fired with such zeal for the spread of the system in which he had instructed them. The students who had come under his personal influence became veritable propagandists, eager to find, in every country, confirmation and illustration of their master's doctrines. To have sent forth such men as Alexander von Humboldt, Leopold von Buch, Voigt, Blumenbach, Schlotheim, D'Aubuisson, and Jameson, to mention only a few of his disciples, casts an unrivalled glory around the name of Werner.

When we attentively consider the system devised and expounded by this great teacher, we cannot but be convinced that his eloquence and enthusiasm and the attractiveness of his personal character must have been extraordinarily great. He was not a creative genius, and could not claim originality for the main parts of his system, which had been more or less distinctly anticipated by his predecessors. Possessing, however, a remarkable instinct for order and method, he had the signal merit of evolving out of what was known regarding the rocks of the earth's crust a more precise and definite system than had previously been proposed. This system had the great attractiveness of simplicity. It was, moreover, applicable, he maintained, in every part of the globe. It was promulgated by him as a body of well-ascertained fact which did not admit of dispute. 'We are convinced' or 'we know for certain' were the phrases with which he preluded statements that are now admitted to be entirely erroneous. The confidence and ardour with which his tenets were enforced by him could hardly fail to impress his audience with the conviction of their truth. Hence, when his pupils left him to start on their career of independent observation,

their aim was usually not so much to ascertain by detailed examination the character and arrangement of the rocks which they might encounter, as to apply to these rocks the classification of their master. The typical Wernerian generally thought that he had completed the geognostical description of a district when he had enumerated its component formations, and had assigned to them their respective places in the Freiberg scheme.¹

Nevertheless, while the debt must be gratefully acknowledged which geology owes to this great master for the impetus which he gave to the infant science, we cannot but feel surprise that even the glamour of his personal influence should have enabled his system to attain the wide acceptance which it undoubtedly enjoyed in his day. The central postulate of this system—that the earth was once surrounded with an universal ocean which covered the highest mountains and from which all the primitive rocks, such as granite, porphyry, and basalt, were deposited by chemical precipitation—has long been admitted to have stood in direct contradiction to the laws of physics and chemistry, even imperfectly as these had been made out at that time. Werner's adoption of the time-honoured error that volcanoes are caused by the conflagration of combustible materials underground, naturally led him to the conclusion that volcanic action must be a modern and accidental phenomenon, which could not have arisen until after extensive forests had been buried and converted into seams of coal. He was thus blinded to the evidence for the internal heat of the earth, and for the part played by eruptive rocks in the architecture of the terrestrial crust. Of the varied and complicated nature of that architecture he appears to have had hardly any idea.

¹ The testimony of a shrewd pupil of Werner, G. B. Greenough, the first President of the Geological Society, as to this tendency of the disciples of the Freiberg school, has a special significance: 'Virgil's peasant fondly imagined his native village a miniature of Imperial Rome. With a corresponding love of generalisation Werner imagined Saxony and Bohemia a miniature of the world. He set down, more or less correctly, the order in which different rocks had arranged themselves in the districts with which he was acquainted, and concluded that such must be the order of their arrangement in every other district. His theory was useful as a standard of reference, an incitement to inquiry, a clue to observation; but unfortunately for Werner, his pupils viewed it in a different light; it was represented by them, not as an hypothesis to be tried, but as a system to be followed; a system mature at its first conception and perfect in all its parts and proportions. To merit of so high an order Werner was not entitled.'—*A Critical Examination of the First Principles of Geology in a Series of Essays* 1819, p. 234 (see pp. 128, 129 of this Address).

The term, 'Geology' which had been suggested by De Luc in 1778, and was first confidently used in the following year by De Saussure, was not adopted by Werner. He called his science 'Geognosy,' or earth-knowledge, as if he wished, by such a term, to distinguish it as a body of ascertained facts and principles which raised it to a different level from the hypothetical and fanciful 'theories of the earth' proposed by his predecessors and contemporaries. He was happily unconscious of the large part which the fanciful played in his own system. From the prominent place which he assigned to the ocean in the building up of the solid globe, he and his followers came to be known as the Neptunist school. For a time they were so much the dominant party in the investigation of the history of the earth, that any other party can hardly be said to have been then in existence.¹

While the fame and the tenets of the eloquent professor at the Freiberg Bergakademie were every year spreading more widely over the world, there were two centres of geological activity, where, outside the Saxon school, a few able observers were quietly at work, for the most part independently of each other, investigating facts and principles which in the end came to have a profound influence on the development of Geological science. One of these centres lay in France, with Guettard, Desmarest, Dolomieu, and Faujas de Saint-Fond as its foremost names, the other in Scotland, with Hutton, Playfair, and Hall as its exponents.

¹ It may be of interest to cite here the contemporary opinion of the Italian observer Breislak, who, besides having done much geological work in his own country, was familiar with the geological literature of his day. 'We have in Europe a school (the Wernerian) highly reputable from the celebrity of its founder, and from the number and accomplishments of his pupils. Its dogmas have been so widely spread that it may seem rash to throw any doubt upon them. I will only say that the position once filled by the authority of the pulpit has long been given to reason, observation, and experience. Some of the tenets of this school are very vague and doubtful; many of its ideas are indefinite, such as its *more* or *less*, and its *little* and *much*; its nomenclature is mysterious, with no rational meaning, difficult to pronounce and all the more difficult to retain in the memory. Many of its absolute decisions, supported only by authority, are destitute of any valid arguments in their favour, and are founded for the most part on some isolated observations which are contradicted by very many others of an opposite kind. Such a body of doctrine would seem to be designed rather to drive away from the study of geology those who love to reason. Yet propagated by a hundred pens, some good and some bad, it has already penetrated into France and England, and now seeks to creep into Italy.'—Breislak's 'Introduzione alla Geologia' 1811, p. xx of Preface.

No part of Europe figured more largely in the geological discussions of the period with which I am dealing in this address than the now classical volcanic region of Central France. As far back as the year 1752, Guettard had detected and announced to the Academy of Sciences at Paris the volcanic origin of the Puy^s of Auvergne. Eleven years later Desmarest began, in the same region, that laborious and patient enquiry which, lasting for more than forty years, enabled him to lay the foundations of two of the most interesting departments of geology. He demonstrated the volcanic nature of basalt, and showed with marvellous acuteness how the successive eruptions of a volcanic region are to be distinguished. To him we must look up as the father of Volcanic Geology. Nor are our obligations to him less for his contributions to Physiography. The merit of the discovery that valleys have been excavated by the long-continued operation of the streams which flow in them, has been credited to different writers; but although this truth had already been more or less distinctly expressed, as, for instance, by Buffon, there can yet be no doubt that it was first demonstrated in detail from concrete examples by Nicholas Desmarest. The successive memoirs of this illustrious observer, descriptive of his work in Auvergne, were published at intervals from 1774 to 1806, the last of them appearing only the year before the Geological Society was founded. Had they been generally read and appreciated in his time, the bitter controversy over the origin of basalt ought never to have arisen. If, however, Desmarest's writings were little attended to by the Neptunists of the day, they attracted the notice of the ecclesiastically orthodox. Their author was charged with having made use of the popular estimation in which the Academy of Sciences was held, to publish, under the Academy's auspices, statements which tended to undermine belief in the Biblical narrative of creation, and even to destroy the Christian faith.¹ Desmarest has thus the honour of being perhaps the last geologist of France to be denounced as a heretic for his scientific opinions.

To an illustrious contemporary and fellow-countryman of Desmarest, volcanic geology is likewise under great obligations. Dolomieu devoted himself, during the last quarter of the eighteenth century, to the study of active and extinct volcanoes, and extended his explorations from Central and Southern France into Spain,

¹ K. C. von Leonhard, 'Die Basalt-Gebilde' vol. i (1832) p. 47.

Portugal, the Alps, and across the greater part of Italy. His account of the gradations of eruptive material from the crystalline to the vitreous condition was an observation of which the significance was not perceived at the time. He was the first geologist who, so far as I know, recognised the intercalation of contemporaneous volcanic rocks among stratified formations.¹

Faujas de Saint-Fond was another able Frenchman who distinguished himself by his researches in volcanic geology. His work on the extinct volcanoes of the Vivarais and Velay, published in 1778, four years after the appearance of the first of Desmarest's memoirs, was a valuable contribution to this department of geology. His travels in Scotland during the year 1784 enabled him to detect, for the first time, the volcanic nature of several tracts in that country, and he deserves to be remembered as the first geological traveller who, in spite of the difficulties of locomotion at that time and the obstacles offered by a tempestuous climate, set foot on the island of Staffa.

When these pioneers were each gradually gathering together a body of evidence towards a better comprehension of volcanic history and when De Saussure was exploring the rocks and the topography of the Alps, Hutton at Edinburgh, after long meditation, had reached some broad conceptions regarding the vicissitudes of the earth's surface. He used freely to expound these views to his friends, but for some time refrained from giving them to the world. At last, in the spring of the year 1785, he was persuaded to communicate them in a paper to the Royal Society of Edinburgh, then recently founded. This remarkable memoir contained the first sketch of his 'Theory of the Earth,' which was enlarged ten years later into two octavo volumes. These writings mark the starting-point of what has been termed the Uniformitarian school of geology, of which Lyell subsequently became the great exponent. It was a fundamental feature in Hutton's philosophy that the present affords the key to the past, and that we are not at liberty to imagine new causes of change when those seem insufficient which occur in our experience. Hutton saw, more clearly than had ever been seen before, the reality and the results of the continual decay of the surface of the land and the removal of its waste to the floor of the sea. He perceived that unless, from time to time,

¹ I have referred to this feature of the work of Dolomieu in my 'Founders of Geology' 2nd ed. p. 260.

some compensating force should redress the balance, all the land on the face of the globe would be reduced below the level of the ocean. This force he regarded as the expansive power of heat within the earth, whereby portions of the sea-bottom, with all their accumulated and hardened sediments, are upraised into new land. Looking on volcanoes as proofs of the existence of this internal heat, he spoke of them as

‘not made on purpose to frighten superstitious people into fits of piety and devotion, nor to overwhelm devoted cities with destruction, but as spiracles to the subterranean furnace, in order to prevent the unnecessary elevation of land and fatal effects of earthquakes.’¹

But besides the material erupted to the surface from volcanic vents, large masses of once molten rock were believed by Hutton to have been injected from below into the crust of the earth and to have consolidated there in the form of what he called ‘subterraneous lavas.’ Thus, while the Neptunists were everywhere proclaiming the aqueous origin of the primitive rocks, including granite, porphyry, and basalt, the Scottish writer had clearly discerned their true igneous character and the part they play in the general structure of the terrestrial crust. That there were imperfections and misconceptions in his theory of the earth must be freely allowed, as where, for example, he pushed his view of the influence of internal heat so far as to maintain that flint, agate, and jasper have been introduced in a fused state into the rocks in which they occur. But the main broad principles for which he contended have been amply sustained by subsequent research, and they now form fundamental parts of modern geology.

Nevertheless, in his own lifetime Hutton’s writings met with but little notice. It is true that his original Memoir was made by Desmarest the subject of a critical, but generally appreciative, review in the first volume of the ‘Géographie Physique.’ On the other hand, it was assailed by De Luc and virulently attacked by Kirwan. Doubtless its title of ‘Theory of the Earth’ might suggest the crude cosmogonies and fanciful speculations which had done duty for scientific treatises in bygone years. Its prolix style and its appearance in the publications of a learned society which

¹ Trans. Roy. Soc. Edin. vol. i, p. 265. We do not gather from the memoir, however, what in Hutton’s view was the mechanism by which the expansive power of heat gives rise to elevation of the terrestrial crust.

had only just been founded were likewise against its soon becoming widely known.

But while the world outside might remain indifferent, Hutton was happy at Edinburgh in the possession of friends who recognized his genius, and with whom he could discuss the various problems which occupied his attention. Among them was Sir James Hall, who, from his subsequent ingenious and prolonged applications of laboratory methods to the elucidation of geological questions, is justly regarded as the founder of Experimental Geology. Another close ally was the illustrious chemist Joseph Black, famous for his discovery of carbonic acid and his researches in latent heat. But perhaps the associate who entered most fully into Hutton's geological pursuits was John Playfair, Professor of Mathematics in the University, who, zealous for his friend's reputation and for the credit of his speculations, published, after Hutton's death, his 'Illustrations of the Huttonian Theory.' The appearance of this volume in the year 1802 marks a notable epoch in the history of geological science. From its logical presentation of facts, its calm and persuasive statement of conclusions, and its rare grace of style, it exerted, as Hall has recorded, 'a powerful influence on the minds of the most eminent men of science of the day.' It quickened an interest in geology among general readers in Britain; it cleared the pathway of enquiry for those who might be tempted to prosecute the study, and it gave to the infant science a concrete and attractive form.

Had there been at this time in Edinburgh University a gifted teacher who could have thrown himself entirely into the task of expounding the geology of Hutton and his associates, the Scottish metropolis might conceivably have become a second Freiberg, so far at least as to form a centre for the propagation of a new geological system. But there was no one there gifted with the ardour and eloquence, together with the opportunities of spreading his opinions, enjoyed by Werner. The influence of Hutton, Playfair, and Hall took some time to make itself felt. Meanwhile the leaven of Wernerism had reached Edinburgh, where the Freiberg doctrines were espoused by an active band of zealots. Within a few months after the appearance of Playfair's 'Illustrations,' an anonymous volume made its appearance there, with the title of 'A Comparative View of the Huttonian and Neptunian Systems of Geology,' in which Hutton's views were criticised and rejected

as visionary, while those of Werner were extolled as not indulging in hypotheses and being more in accordance with nature.¹ At the head of this active company of Wernerians stood Robert Jameson, who had published in 1800 his 'Mineralogy of the Scottish Isles,' in which he showed his Neptunist opinions, and indulged in occasional sneers at those of the opposite faith, whom he styled 'forlorn fire-philosophers.' His Neptunism was further confirmed when he subsequently went to Freiberg to study under Werner, whose zealous and active disciple he forthwith became. Four years later, in 1804, he was elected to the Professorship of Natural History at the University of Edinburgh, where he had thenceforth the fullest opportunity of spreading a knowledge of his master's system. Like a true Wernerian, he at once entered on a course of ardent propagandism. In 1808, the year after the foundation of the Geological Society of London, he formed at Edinburgh a rival organisation, which he called the 'Wernerian Society,' placing the great Werner himself at the head of its list of Honorary Members. This Society served for some years as the active headquarters of the Neptunist cult in Britain.² The year after it was started Jameson took a further important step towards the furtherance of the Freiberg doctrines, for in 1809 he published his 'Elements of Geognosy,' in which, while finding vent for his antagonism to the views of his fellow-townsmen, Hutton and Playfair, he gave one of the fullest accounts that we possess of Werner's system.

The controversy regarding the origin of basalt, to which I have already alluded, formed a conspicuous feature in the progress of geology during the last decade of the eighteenth and the first two decades of the nineteenth century. As it was in the midst of this controversy that the Geological Society had its birth, we may

¹ A French translation of Playfair's 'Illustrations' and of this 'Comparative View' by Dr. C. A. Basset was published in a single volume at Paris in 1815, that is, thirteen years after the appearance of the original works. To the final stately sentence of the 'Illustrations' in which Playfair appealed to the judgment of posterity on Hutton's system, the translator appended the following footnote: 'The work which I translate was printed in Edinburgh for the first time in 1802; and I ask whether in thirteen years the prediction of the author has been accomplished'—as if a settled decision could be expected while the two opposing schools were in the midst of a bitter controversy. The judgment to which appeal was made has now long since been pronounced.

² It survived for some thirty years, but in its later days ceased to show any signs of Wernerism, its younger and more active members, together with Jameson himself, having passed over to the Vulcanist camp.

appropriately consider what was the subject in dispute and how it came to divide the geological world into two hostile camps.

That basalt, especially where it was seen to lie in sheets over various obviously sedimentary strata, should have been regarded as itself of aqueous origin, was a natural conclusion to be drawn by early observers. Where it had been reduced by denudation to isolated outliers capping hills and plateaux, and where its decayed material seemed to merge into the sand or gravel underneath, there was little suggestive of volcanic action to eyes that had no experience of volcanoes. Basalt and its associated strata had accordingly been grouped together as relics of the Floetz deposits of an ocean that was believed to have spread over all the land of the globe. Even Guettard, who had detected the volcanic origin of the Puy of Auvergne, wrote a paper in 1770 to prove that basalt is not a lava, as some writers claimed, but that it has crystallized from an aqueous solution. It was natural that Werner should adopt the same opinion, so consonant as it was with his geognostic system.

From an examination of the Stolpen and a visit to a district in Bohemia where some underground coal-seams had taken fire, Werner deemed himself warranted to affirm, and to publish to the world, his belief that no basalt is volcanic, but that all these rocks, like those of the Primitive and Floetz series, are of aqueous origin. After a subsequent excursion to the Scheibenberg, in the Erzgebirge, he announced, in 1788, as a 'new discovery,' that all basalt constitutes, with clay, sand, and wacke, one single aqueous formation which originally stretched over the Primitive and Floetz rocks, though in course of time it has been reduced to mere cappings on the hill-tops.¹ Thenceforth, to maintain the aqueous origin of basalt became one of the prominent articles in the creed of every true Wernerian.

On the other hand, that basalt is a form of lava and marks a site of former volcanic activity had been maintained by various writers in Germany, as well as in France and Britain, such as Ferber, Raspe, Leske, Desmarest, Dolomieu, Faujas, Hutton, and

¹ C. Keferstein, 'Geschichte und Litteratur der Geognosie' 1840, p. 69. It appears that Werner was so elated by his observations on this occasion that he at once sent an account of them to a Jena journal, under the title of a 'new discovery.' It is certainly instructive to contrast, as Keferstein does, this rapid, sweeping, and dogmatic deduction from an extremely limited observation, with the laborious, protracted, and oft-repeated investigations of Desmarest on the same subject.

others. Those who held this opinion were known as Vulcanists, while those who, like Hutton, maintained that many masses of rock had been injected in a molten condition into the crust of the earth deep beneath the surface, were sometimes further distinguished as Plutonists. Among the Vulcanists, however, there was some contrariety of opinion regarding the source of volcanic action. Hutton, as we have seen, believed in a vast reservoir of heat within the globe, of which volcanoes are outward manifestations. Others, however, still clung, like the Neptunists, to the antiquated delusion that the origin of volcanic energy is to be sought in the ignition of combustible materials within the crust of the earth. Even so experienced a Vulcanist as Breislak, who by his various explorations and writings did such good service to the progress of the young science, endeavoured to prove that the real source of volcanic energy is traceable to petroleum diffused all over the terrestrial crust and set on fire by subterranean electricity, or by combinations with phosphorus or with mineral acids.¹

Although such marked differences of opinion had long existed regarding the true nature of basalt, no definite controversy had been developed on the subject until Werner published in 1788 his 'new discovery' about the aqueous origin of the basalt formation. A month after the appearance of his announcement, it was challenged by one of his old pupils, J. K. W. Voigt of Weimar, who declared that, so far from being an aqueous formation, the Scheibenberg basalt formed part of a lava-stream that had flowed over the layer of sand on which it rested. Werner, momentarily drawn into controversy, published a reply maintaining his opinion, which he further supported by a subsequent statement of his belief that all volcanoes arise from the combustion of underground seams of coal. But though he himself retired from the discussion, the question of the origin of basalt rapidly became a momentous subject of dispute, and continued so for at least a generation. It was not merely the petty question of the origin of a particular kind of stone that kindled such a strife. It was the antagonism of two distinct and incompatible schools of thought, and the basalt-war was only the outward and visible expression of this antagonism. On the issue of the dispute the progress of geology for the immediate future depended.

As an indication of the hold which the matter in debate had upon the young students of the day, it may be pointed out that

¹ 'Institutions Géologiques' 1818, vol. iii, pp. 26, 41, 42.

three of the most distinguished of Werner's pupils began their independent geological careers by taking up the basalt-question from the Neptunist side, and publishing the results of their observations. Alexander von Humboldt directed his attention to the development of the rock in the valley of the Rhine.¹ Leopold von Buch in his mineralogical description of the district of Landeck, and in his subsequent account of his journeys through Germany, Italy, and France, still maintained the Wernerian doctrine about basalt, and ridiculed the notion of calling in the mighty energies of the volcano to account for the little scattered basaltic hills of Silesia.² D'Aubuisson de Voisins started among the basalts of Saxony, and published a small volume about them in which he maintained the Freiberg view of their origin.³ Other writers in Germany, such as C. W. F. Charpentier, Widenmann, Karsten, and Gerhard, supported the same opinion, which was likewise stoutly held by Jameson and his disciples in Britain.

It is difficult now to realise how much personality was unhappily introduced into this discussion. Where the Neptunist dogma had long been dominant, to depart from the time-honoured belief that basalt is an aqueous rock, was looked upon as a mark of scientific extravagance, vivid imagination, and a love of the marvellous. The conclusions of Desmarest and the other French observers were explained away by supposing that the term 'basalt' must have been applied by these writers to something quite different from what had been so named in Germany, and that the results of the underground conflagrations of coal-seams had been confounded with recent lavas.⁴

It is remarkable that for many years the Neptunists paid no heed to the proofs furnished by Desmarest of the volcanic nature of basalt. No one seems to have taken the trouble to go over the evidence adduced by the French geologist until, in 1802, L. von Buch, in the course of his first long journey, paid a visit to Central France. The evidence which he there beheld completely convinced

¹ 'Mineralogische Beobachtungen über einige Basalte am Rhein' 1790.

² 'Geognostische Beobachtungen auf Reisen durch Deutschland und Italien' vol. i (1802) p. 126.

³ 'Mémoire sur les Basaltes de la Saxe' Paris, 1803.

⁴ See on this subject Leonhard's 'Basalt-Gebilde' vol. i, p. 81. The reproach was made that the want of acquaintance of foreign nations with the languages of other countries made them incompetent to understand and appreciate the writings in which the Neptunist doctrines were expounded. Werner himself, however, as is well known, abstained from reading the scientific publications of foreign countries, and eventually even those of his own land.

him that for that region at least there could be no doubt of the volcanic origin of its basalts, and with characteristic frankness he at once published his conviction to the world, remarking at the same time that volcanic action could be studied more clearly in Auvergne than at Etna or Vesuvius.¹ This was the beginning of the great geologist's secession from the Neptunists. His contemporary Ami Boué, who, though trained under Jameson, despite his master, speedily became a Vulcanist in Scotland, says of Von Buch that 'in the year 1798 he left Germany a Neptunist and came home in 1802 a Vulcanist.' His conversion was hardly so rapid, but it became more decided every year as his travels and experience extended. This was the severest blow which the Neptunist school had yet received, for Von Buch was rapidly rising to the foremost place among the geologists of Germany, and his example greatly helped to turn the tide against the hitherto triumphant Neptunism. D'Aubuisson, too, another loyal disciple of Werner, went to Auvergne and was as speedily and completely convinced as his old fellow-student at Freiberg had been, and with equal frankness and promptitude published an acknowledgment of his change of opinion.²

The defection of these distinguished followers of Werner gave a new impetus to the controversy by powerfully strengthening the position of the Vulcanists, whose views now began to gain increasing acceptance even in Werner's own country. The death of this illustrious man in the summer of 1817 marked the beginning of the last phase in the history of Neptunism. Thereafter this form of scientific delusion speedily died out. Here and there, indeed, the voice of a sturdy and unconvinced adherent of the Wernerian cult might be heard in opposition or protest. One of the most interesting of these voices was that of the poet Goethe. Among his varied accomplishments this widely-gifted man could count some practical acquaintance with the geognosy of his time, for he had himself studied at Freiberg under Werner, had imbibed his master's precepts, and had made many journeys in Europe for

¹ *Journal des Mines*, vol. xiii (1802-1803) p. 249.

² *Journal de Physique*, vol. lviii (1804) p. 427. This confession was made to the Institute of Sciences in Paris, the year after the appearance of his Neptunist account of the basalts of Saxony. Yet the Edinburgh Neptunists ten years later published an English translation of the latter work with the naïve remark that it was understood that D'Aubuisson had modified his opinion about the basalts of Auvergne, but that it was not known that he had expressed any change of view respecting those of Saxony.

the purpose of studying the rocks. He has recorded his attitude towards the two rival schools, and his remarks enable us to realise the feelings of a convinced Neptunist at this juncture of conflict and change.

In one of his writings, where Goethe speaks of himself as having been for fifty years a true disciple and follower of the Wernerian doctrines, he complains that no source of greater perplexity can be imagined than to be startled out of his peaceful convictions by having opinions which he had fondly believed to be as well-founded as they were widely diffused, now challenged on all sides as no longer tenable. He declares that again and again, during many years, he had himself examined the rocks of the Harz, the Thüringer Wald, the Fichtelgebirge, Bohemia, Switzerland, and Savoy, before he ventured to express an opinion about them. Granite had hitherto appeared to his eyes as the solid unshattered foundation-stone on which all other rocks had been laid down. The Primitive masses formed, in his view, the earliest deposits from the great solution of Chaos, and all their summits and peaks, all their mountain-chains and valleys offered to him no subject for wonderment, but could be intelligibly accounted for as the natural result of this first great natural process of separation. From the crystalline masses he had passed to the Transition rocks, wherein he could recognise a succession of definite formations. From the red sandstone he had surveyed the Floetz series, which he found to be everywhere naturally linked together in regular and orderly sequence. As to volcanoes, he had seen no reason to dissent from the teaching of his master, that they were a continuous but superficial and recent operation of Nature.

But now all this accepted and reasonable system was to be changed. Instead of having been built up by a succession of tranquil depositions from an universal ocean, the surface of the earth, they were now told, had been everywhere broken up and its rents and chasms had been filled by the ascent of molten material from unknown depths below. The porphyry of the Tyrol was declared to have burst through the Alpine limestone, and to have carried up the dolomite with it into the heights. Sweden and Norway, it was now asserted, had at intervals raised themselves out of the sea. Yet these operations of the remotest antiquity assuredly no eye ever beheld, nor did any ear ever listen to their tumult.

What, then, asks the poet, does an adherent of the old school see

in all this new system? He finds only transpositions of phenomena, random inductions and analogies, together with bold assertions which have to be taken on trust. After a life-long course of research, during which his opinions had only met with continued confirmation, he himself cannot change his mind in favour of a doctrine which is of a diametrically opposite kind, dealing with nothing solid and regular, but with accidental and disconnected events.¹

The keen interest with which Goethe followed the progress of the controversy is shown by the repeated references to the subject in the second part of his *Faust*. He there introduces a discussion between Thales as Neptunist and Anaxagoras as Vulcanist and in a later act of the play he puts into the mouth of Mephistopheles a ludicrous picture of the Vulcanist doctrine, to which Faust, as a weary Neptunist, protests that the origin of mountains and valleys is not a question for debate, seeing that they naturally arose in the course of the original shaping of the world, without the need of any such mad turmoil to account for them.² It was, perhaps, the highest distinction ever reached by Neptunism that its decadence and approaching dissolution should have drawn forth the sympathy of the greatest poet of Germany.

While the two opposing schools were thus battling for their respective doctrines, the study of the rocks and their problems was attracting ever-increasing attention. The hammer of the geologist, as well as that of the geognost, was to be heard in all parts of Europe. In America also both sides were represented, for while Silliman was proving the igneous origin of the East Rock of New

¹ 'Verschiedene Bekenntnisse' in vol. ix of Goethe's 'Naturwissenschaftliche Schriften' pp. 258-65 (Weimar Edition) 1892. The essay ends with the remark that the modern doctrine of the earth's internal heat is, after all, only a dignified revival of the notions of Kircher in the seventeenth century.

² Carlyle, whose veneration for Goethe was so great, had not improbably in his memory some of the passages in the second part of *Faust* when he wrote:— 'Of Geology and Geognosy we know enough: what with the labours of our Werners and Huttons, what with the ardent genius of their disciples, it has come about that now, to many a Royal Society, the Creation of a World is little more mysterious than the cooking of a dumpling.' ('*Sartor Resartus*' chap. i.) He not improbably heard a good deal of the Neptunist and Vulcanist warfare when he was a student in Edinburgh, for it was then in full vigour there. He attended at least some of Jameson's lectures, and has recorded a not very complimentary estimate of him ('*Early Letters of Thomas Carlyle*' vol. ii, p. 192).

Haven, Maclure made the first geological map of the United States, on the lines of the Wernerian classification.

If we look into the literature in which the results of all this fervour of research were embodied, we find it to be singularly unlike that which is produced in our own day. It is above all distinguished by the marked mineralogical and lithological character which had for so long been the dominant feature in the study of the earth's crust. We discover comparatively few references to the organic remains contained in the rocks, and these are usually of the vaguest kind, any stratigraphical indications that may be found being generally after the stereotyped Wernerian pattern. The belief that fossils are mere 'sports of Nature,' or relics dating from Noah's flood, had, indeed, passed away, but had not yet been followed by a realisation of the profound biological and stratigraphical interest with which these remains are now seen to be invested. It was in the midst of these surroundings, and with these various influences at work, that the Geological Society took its rise in the year 1807.

Nevertheless, before that time a beginning had been made in the scientific appreciation of organic remains, and the first steps had been taken towards the creation of Palæontology and a reliable Stratigraphy. Lamarck, who had made his fame as a botanist, was appointed, in 1793, Professor of Invertebrate Zoology at the Muséum d'Histoire Naturelle, Paris, and before long, with his characteristic genius and energy, he had begun the detailed study of the Tertiary Mollusca of the Paris Basin. On that material he laid the foundations of Invertebrate Palæontology. Cuvier, his colleague in the same institution, had astonished the world with his reconstruction of the extinct quadrupeds of the Paris gypsum. By his researches in comparative anatomy he had sketched the first broad outlines of Vertebrate Palæontology. While in France these epoch-making researches were in progress, the study of organic remains was also engaging attention in other countries. Blumenbach in 1803 published his '*Specimen Archæologiæ Telluris*,' in which he gave a rough classification of the fossil animal remains known to him. Next year there appeared the first work of the illustrious Von Schlotheim on the plants of the Coal-Measures of Thuringia. In the same year, also, Parkinson issued the first of his pleasantly written and well-illustrated volumes on the '*Organic Remains of a Former World*.' These and other works of the period did good service in fostering an appreciation of

the interest of fossils as memorials of tribes of plants and animals no longer living on the earth. But the special geological significance of organic remains, as supplying a key to the chronological succession of the various sedimentary formations of the earth's crust, still remained to be recognised.

Though not yet generally understood, this stratigraphical key had actually been found some years before the Geological Society was born. In the last decades of the eighteenth century, William Smith, while engaged as a land-surveyor and engineer, in the West of England, had observed that the several geological formations of that region could each be distinguished by its peculiar fossils. This momentous discovery was not for some time published by him, though he freely made it known to all who were interested in such subjects. In 1799 he put down his observations in the form of a table of the English formations from the Coal-Measures up to the Chalk, with an enumeration of the more characteristic organic remains of each subdivision. Although copies of this table were widely distributed, its meaning and value for geological and practical purposes were slow in being recognised.¹ It finds no place in the early papers of the Geological Society, nor does the name of William Smith figure in the list of founders or honorary members of the Society. So little did his work attract notice among the geologists of the day that probably most of them were unaware of its significance, until a generous appreciation of it by Fitton appeared in the spring number of the 'Edinburgh Review' for 1818.²

In the first years of last century, Cuvier and Alexandre Brongniart, independently of William Smith, discovered among the Tertiary deposits of the Paris Basin the same law of stratigraphical succession which he had found among the Jurassic formations of the

¹ An account of Smith's discoveries and conclusions, written by John Farey, was published in August 1807, in Rees's 'Cyclopædia.'

² That the Geological Society should have been tardy in its realisation of the importance of Smith's work is not, perhaps, matter for surprise when its President, Greenough, in his volume of Essays already cited, which was published in 1819, could find no more to say of it than the following sentence:—'Mr. Smith is well known to have embraced this idea [the recognition of strata by their included organic remains] at an early period, and in a table attached to his Geological Map of England, has specified a variety of fossils by which the strata of England may, in his opinion be identified' (p. 287). He then goes on to express his opinion that 'the utility of fossils has been greatly over-rated.'

West of England. The first sketch of their remarkable labours was published the year after the foundation of the Geological Society. It was afterwards amplified and issued in 1811 as a well-illustrated volume, which has long since taken its place among the classics of geological literature. From the accuracy of its palæontology, which was largely based on determinations of the fossil shells made by Lamarck, from the precision of its stratigraphical subdivisions, which were mainly worked out by Brongniart, and from the collaboration of so distinguished a naturalist as Cuvier, this quarto exerted a powerful influence on the progress of stratigraphical geology, which from that time rapidly advanced to the commanding position which it has long held in our science.

From the brief historical retrospect which I have now sketched, we perceive that the Geological Society of London was the characteristic product of a time when the study of rocks and fossils was attracting a wide general interest, when those by whom it was prosecuted in Europe were divided into two antagonistic schools by a keen controversy over some of the fundamental principles of their science, when the growing spirit of travel impelled many of them to make extensive journeys at home and abroad and to gather, from ever-widening fields of observation, the necessary broad basis of ascertained fact on which geology was to be built up. The infant science had at that time hardly advanced far enough in England to be able to collect together a body of men specially dedicated to its pursuit. Those who interested themselves in its rise and progress were chiefly mineralogists and chemists, and naturally the mineralogical and lithological side of the study was that which most attracted them. It need not surprise us, therefore, to find that of the original thirteen founders of the Geological Society more than half were mineralogists or chemists, and that only three of their number might properly be called geologists. This band of earnest men were drawn together, partly in view of the facilities for study presented by the existence in London of 'many mineralogical cabinets,' and of 'a considerable collection of the mineral productions of the British Islands,' as well as 'several series of foreign rocks.' But they also saw that in no department of natural knowledge did more remain to be discovered than in geology, and that in none was co-operation for its advancement more necessary. They therefore resolved to meet together for the purpose of 'communicating to each other the result of their observations, and of examining how

far the opinions maintained by the writers on Geology were in conformity with the facts presented by Nature.'¹

It was thus to be expected that at least the earlier papers published by the Society should show the prevalent mineralogical and lithological tastes of the majority of the members. Among the contributions to the first volume of the 'Transactions,' published four years after the Society had started, some were written by men who had studied under Werner, and most of them might have been the productions of the most orthodox Wernerians. A marked exception to the general rule among them was an essay by James Parkinson, wherein the importance of fossils as guides to the stratigraphical succession of formations was insisted upon.² To this paper we may look back with no small interest, for it was the beginning of the voluminous literature which the Society has since published in this department of Geology.

While on this Centennial Anniversary the Geological Society desires to keep in grateful recollection what it owes to all the founders and early members who, not without labour and in the face of various difficulties, guided its steps from infancy to vigorous youth, there is one name among them which I feel that we should specially commemorate on this occasion—that of George Bellas Greenough. Not only was he one of our original founders, but he had the unique distinction of being thrice elected to fill the Presidential Chair. Yet such visible evidence of his activity and of the appreciation in which he was held during the first half-century of the Society's life only partially indicates the sagacious pilotage, the unwearied devotion, and the well-merited influence which he displayed in the affairs of the Society. He had studied under Werner at Freiberg, and was himself sometimes called a Wernerian, but he could not be fairly regarded as a partisan of either of the contending schools. He held, or at least tried to hold, the balance even between the extremes of both. As an acute and often sarcastic critic, he undertook the task of pointing out to each side the flaws in their arguments. He continually appealed from the theoretical conclusions brought before the Society to the testimony of actual facts. As he had travelled much and was well versed

¹ Preface to vol. i of the Society's 'Transactions,' dated 1811.

² 'Observations on some of the Strata in the Neighbourhood of London, and on the Fossil Remains contained in them' Trans. Geol. Soc. vol. i, p. 324. In this paper the author makes reference to the labours of William Smith, and quotes the then lately published work of Cuvier and Brongniart.

in Continental geology, he brought into the discussions a weight of opinion such as few or none of his contemporaries could equal. At one time he would seem to belong to the Neptunist camp, as when, for instance, he taunted the Vulcanists with imagining the occurrence of basaltic rocks in isolated hummocks to be 'a remarkable phenomenon, out of the common course of nature, and to be explained only by the capricious interference of their favourite idol Vulcan or Pluto.'¹ But his sarcasms at other times were quite as incisive against what he conceived to be the vagaries of the Wernerian side. He did not scruple to animadvert even upon the great oracle of Freiberg himself, as when, for example, he quoted some sentences from Werner's 'Treatise on Veins' and appended to them the remark that 'those who can unravel the meaning of this passage will find the ideas contained in it erroneous.'² So sturdy and impartial a censor, ever ready to question the validity of new conclusions, must often have been heard with impatience by those whom he criticised, but his transparent honesty of purpose and kindness of disposition disarmed resentment. That the Society at its start should have been under the influence of such a man must be counted as not the least of its good fortunes. He could not but be an invaluable force in the sifting of opinions and the examination of deductions, so requisite in the building up of a scientific association in a time of rapidly accumulating facts, and of conflicting inferences from them. Greenough attained to no great eminence for original contributions to knowledge, but he will ever have an honoured place in our records for the large share he took

¹ 'A Critical Examination of the First Principles of Geology in a Series of Essays' by G. B. Greenough, President of the Geological Society, 1819, p. 101. Besides this volume, the author's two Annual Addresses during his last tenure of the Presidency of the Geological Society (Proc. Geol. Soc. vol. ii, 1834-35, pp. 42, 145) afford additional evidence of the critical bias of his mind. At the age of 55 he could still deal out his cautions 'to the Huttonian and every other geological sectary.' Yet at the same time he could frankly admit his own errors, when the evidence was strong enough to convince him. He had once advanced an opinion that the earth had at one time 'been covered by one general but temporary Deluge,' but he was satisfied that this was a mistake and he now read his recantation (p. 69). He had likewise come to the conclusion 'that the geological schools of Paris, Freiberg, and London have been accustomed to rate too low the various forces which are still modifying, and always have modified, the external form of the earth.' And he adds a generous appreciation of the share which Lyell had taken in 'having awakened us to a sense of our error in this respect.'

² *Op. cit.* p. 185.

in shaping the Geological Society, and in helping to give to it the impetus which has carried it on through the first century of its existence.

In looking back over the scientific progress of that century, the Society may be pardoned should it feel some pride in the share which it has taken in the development of geology. A large part of the literature of the science in Britain has been given to the world in the pages of its publications. It has numbered among its Fellows, its Foreign Members, and its Foreign Correspondents, most of the illustrious geologists of the time. As the first Society specially founded for the cultivation of geology, its example has been followed in most of the civilised countries of the world, and with the younger associations which have thus arisen it has ever enjoyed the most cordial relations. To the influence of a few of the leaders in the Society the establishment of the Geological Survey of Great Britain as a national institution was largely due, and the Society has watched, with pleasure and admiration, the continued vigour and expansion of that great organisation. It has likewise had the satisfaction of seeing similar national geological surveys since established in our own colonies and dependencies, as well as in most countries both of the Old World and the New. A century so full of progress, alike in the theoretical development and in the practical applications of geology, gives the best augury for the success of the new century on which we are entering. In no spirit of vain glory, therefore, but in the consciousness that the Society has striven to do its best in the cause of our beloved science, we regard the presence among us to-day of so many representatives of science and of scientific institutions at home and abroad as a recognition that our labours have not been without success. It is with the sincerest gratification that we receive their friendly greetings. We are proud to welcome here men whose achievements have long called forth our admiration, whose names have been household words among us for years, but whose faces may never until now have been seen by many of our members. That these leaders should have travelled so far to be with us to-day is a compliment which we sincerely appreciate.

We trust that our guests will take home with them the expression of our heartfelt thanks for the honour done to us by the various institutions from which they have come as delegates. Let us hope also that from their visit to us they may carry away the impression that the Geological Society of London, after the lapse of a hundred

years, has not entered upon a stage of senile decay, but is still young, vigorous, and enthusiastic, looking confidently forward to a career in the future not less successful and useful than that which we are met to celebrate to-day.

At the close of the Address, which was listened to with great interest, Prof. A. DE LAPPARENT, speaking in French, moved a vote of thanks to the President. He said that no one was better qualified than Sir Archibald Geikie to survey the progress of geological science, and in no country could such a survey be made more appropriately than in the noble country of England, which had done so much for the science—the country of William Smith.

Prof. AUGUST ROTHPLETZ, of the Royal Bavarian Academy of Sciences and of the University of Munich, seconded the vote in English. He had the good fortune to make the acquaintance of Sir Archibald Geikie thirty years ago, and had had occasion then to realise how much he knew. No one was better qualified to give an historical view of geologists and the development of geology, and he had shown himself a master in doing so.

The vote of thanks was heartily passed, and, Sir ARCHIBALD GEIKIE having briefly responded, a vote of thanks was also passed to the Institution of Civil Engineers for permitting the Meetings to be held in their House.

At the conclusion of the Meeting, Fellows and Guests adjourned to the Apartments of the Geological Society, where tea was provided and arrangements for the following day were made.

CHAPTER V.

THE CENTENARY DINNER.

THURSDAY, SEPTEMBER 26TH, 1907.

THE proceedings of the day closed with a Dinner at the Whitehall Rooms of the Hotel Metropole, to which all Foreign and Colonial Delegates and Visitors were invited by the Society, as well as such British Delegates as were not Fellows of the Society. A large number of Fellows also attended, and the list shows that 278 ladies and gentlemen in all were present.

The annexed plan indicates the placing of the guests. It will be readily understood when it is seen that odd numbers are towards the left and even numbers towards the right. This does not apply to table **H** after number 260, or to tables **J, K, L, M, N**, where the numbering becomes consecutive. These tables were added at the last moment, in order to accommodate all those who applied to be present.

A photograph taken during the dinner gives a good idea of the numbers present; and the annexed list, combined with the plan, will enable most of the guests to be recognised at all the tables except parts of **A** and the smaller tables **J-N**, which fell outside the picture. The President was in the chair, and the vice-chairs were occupied by Mr. Herries, Prof. Judd, Prof. Garwood, Dr. Strahan, Prof. Watts, Mr. Monekton, and Dr. Henry Woodward. The *menu-card*, which bore sketches of the first President and of Sir Archibald Geikie, was designed by Miss Lilian Archer. Dinner was served at 7.30 P.M., and the company dispersed at about 11.15.

264

267

270

J

271

273

274

276

K

33 25 17 9 1 8 16 24 32

51 49 47 45 43 41 39 37 35 34 36 38 40 42 44 46 48 50

53 52 79 80 107 106 133 134 161 160 187 188 215 214

65 64 91 92 119 118 145 146 173 172 199 200 227 226

77 76 103 104 131 130 157 158 185 184 211 212 239 238

78 A 105 B 132 C 159 D 186 E 213 F 240 G

241 242

245 246

251 252

256

255 260

261 262

259 263

H

L

277 279 281

M

282 284 286

N

287 289 291

PLAN OF SEATING AT THE DINNER IN THE WHITEHALL ROOMS, SEPTEMBER 26TH, 1907.

LIST OF THOSE PRESENT.

	Table and Seat.		Table and Seat.
Adams, Prof. F. D.	C 109	Chapman, Mr. R. H.	A 68
Adams, Mrs.	C 111	Clark, Prof. W. B.	D 156
Adiassewitch, M. M.	H 242	Clark, Mrs.	D 154
Aguilera, Dr. J. G.	E 170	Clarke, Prof. J. M.	C 114
Aguirre, Prof. Don E.	38	Clarke, Mrs.	C 116
Allorge, M. M. M.	F 197	Clayden, Principal A. W. ...	D 134
Ami, Dr. H. M.	C 121	Close, Major C. F.	8
Anderson, Mr. C. W.	H 241	Cole, Prof. G. A. J.	E 172
Anderson, Dr. T.	B 93	Conwentz, Prof. H.	B 91
Andersson, Dr. J. Gunnar .	51	Cox, Prof. S. H.	E 185
Andrews, Miss M. K.	C 123	Credner, Prof. H.	14
Arber, Mr. E. A. N.	A 66	Crofts, Mr. W. H.	H 252
Armstrong, Prof. H. E.	20	Crosfield, Miss M. C.	C 120
Arnold-Bemrose, Mr. H. ...	C 118	Cross, Dr. Whitman	C 117
		Cross, Mrs.	C 115
Bailey, Mr. T. H.	M 284	Cullis, Dr. C. G.	K 274
Baker, Mr. B. A.	M 282	Currie, Mr. J.	G 231
Baker, Dr. J. C.	B 81		
Baltzer, Prof. A.	26	Davies, Dr. A. M.	A 67
Barnes, Mr. W. D.	E 167	Davies, Mr. H. N.	M 283
Barrois, Prof. C.	18	Davis, Prof. W. M.	46
Bather, Dr. F. A.	49	Dawkins, Prof. W. Boyd ...	D 147
Beadnell, Prof. H. J. L.	G 235	Denham, Mr. H. G.	B 96
Beadnell, Fleet-Surgeon C. M.	G 233	Dixon, Prof. H. H.	D 153
Beck, Prof. R.	A 53	Dollfus, M. G. F.	F 191
Becker, Mr. G. F.	D 133	Dollo, Prof. L.	E 177
Belinfante, Mr. L. L.	D 148	Dorlodot, Prof. H. de	C 125
Bell, Mr. W. H.	33	Dwerryhouse, Dr. A. R.	K 276
Bennett, Dr. F. W.	E 181		
Bergeat, Prof. A.	B 82	Elles, Miss G. L.	C 119
Bergeat, Frau	B 84	Evans, Dr. J. W.	B 97
Berry, Mr. J.	B 79	Evans, Mr. M.	J 269
Bigot, Prof. A.	F 208		
Binnie, Sir Alexander	24	Falconer, Dr. J. D.	J 270
Björlykke, Dr. K. O.	B 87	Fallot, Prof. E.	F 200
Bonney, Prof. T. G.	9	Fearnside, Mr. W. G.	G 238
Boule, Prof. M.	D 145	Field, Mr. A.	H 255
Boulger, Mr. G. S.	H 243	Fourmarier, M. P.	F 207
Boulton, Prof. W. S.	F 194		
Bowen-Colthurst, Mrs.	F 199	Garwood, Prof. E. J.	C 132
Bowen-Colthurst, Miss	F 201	GEIKIE, SIR ARCHIBALD.	1
Bower, Prof. F. O.	A 56	Geikie, Prof. J.	42
Bowman, Mr. H. L.	G 224	Gibb, Mr. A. W.	H 261
Bowman, Mr. J. H.	G 226	Gibson, Prof. Harvey	A 63
Bröger, Prof. W. C.	6	Goodyear, Miss E.	F 193
Brögger, Herr A. W.	C 128	Gosselet, Prof. J.	3
Brook-Fox, Mr. F. G.	H 245	Gottsche, Prof. C.	C 122
Brookes, Mr. J.	H 244	Graham, Dr. M. C.	C 106
Brown, Dr. H. T.	A 61	Graham, Miss	C 108
Brown, Mr. Nicol	H 248	Gracht, Dr. W. A. J. M. v.	
Burton-Brown, Col. A.	B 102	W. van der	B 95
Burr, Mr. M.	K 275	Grautham, Mr. R. F.	M 285
Bury, Mr. H.	D 157	Greenly, Mr. E.	N 287
		Greenly, Mrs.	N 288
Carez, Dr. L.	F 195	Gregory, Prof. J. W.	E 166
Carlyle, Mr. W. A.	H 250	Groom, Dr. T. T.	K 272
Carter, Rev. W. L.	H 254	Groom, Mrs.	K 273

	Table and Seat.		Table and Seat.
Hague, Dr. A.	D 142	Lebour, Prof. G. A.	C 130
Hague, Mrs.	D 140	Leith, Prof. C. K.	C 129
Harker, Mr. A.	D 135	Lemoine, Dr. Paul	F 204
Harmer, Mr. F. W.	F 193	Lemoine, Mme.	F 202
Hatch, Dr. F. H.	B 99	Lewis, Prof. W. J.	G 229
Haug, Prof. E.	30	Loewinson-Lessing, Prof. F.	B 104
Hawksley, Mr. C.	N 289	Lomas, Mr. J.	F 192
Hawksley, Mr. K.	N 290	Lyons, Capt. H. G.	C 113
Healey, Miss M.	C 127		
Heim, Prof. A.	23	McClure, Rev. E.	A 75
Herries, Mr. R. S.	A 78	McKellar, Mr. P.	A 71
Herries, Mrs.	A 76	McKellar, Mrs.	A 73
Hill, Rev. E.	B 94	Maclaren, Dr. J. Malcolm... ..	H 258
Hill, Prof. J. P.	B 100	McWilliam, Prof. A.	G 218
Hill, Mr. W.	A 74	Manson, Dr. Marsden	G 228
Hinch, Mr. J. de W.	A 55	Margerie, M. E. de	E 184
Hind, Dr. Wheelton	J 264	Marr, Dr. J. E.	21
Hooley, Mr. R. W.	J 268	Marriott, Mr. H. F.	L 277
Horne, Dr. J.	49	Mello, Rev. J. Magens	C 124
Howarth, Mr. J. H.	H 248	Metcalfe, Mr. A. T.	H 246
Howorth, Sir Henry	E 168	Miers, Prof. H. E.	17
Howe, Mr. J. A.	J 266	Mill, Dr. H. R.	D 135
Hudleston, Mr. W. H.	12	Mitchell, Dr. P. Chalmers... ..	G 217
Hughes, Prof. T. McKenny .	16	Moberg, Prof. J. C.	B 88
Hughes, Mrs. T. McKenny .	D 144	Molengraaff, Dr. G. A. F. ...	A 65
Hull, Prof. E.	F 209	Monckton, Mr. H. W.	F 213
Hume, Dr. W. F.	G 234	Montag, Mr. E.	N 291
Hutchinson, Dr. A.	A 60	Morris, Mr. H.	43
		Mourlon, M. M. F.	37
Iddings, Prof. J. P.	B 103		
Inkey, M. B. de	G 223	Nathorst, Prof. A. G.	27
		Nathorst, Fröken	E 178
Jackson, Dr. B. Daydon ...	G 216	Newall, Mr. H. F.	29
Jækel, Prof. O.	G 219	Newton, Mr. R. B.	H 263
Johnston, Mr. R. M.	G 220	Newton, Mr. S. P.	H 262
Johnston-Lavis, Dr. H. J. ...	F 205	Norman, Dr. P.	F 187
Johnston-Lavis, Mrs.	F 203		
Joly, Prof. J.	D 151	Oldham, Mr. R. D.	F 206
Jones, Mr. W. R.	L 281	Oliver, Prof. F. W.	A 64
Judd, Prof. J. W.	B 105	Omori, Prof. F.	22
Kayser, Prof. E.	E 174	Parkinson, Mr. J.	G 215
Kayser, Fräulein	E 176	Pavlow, Prof. A. P.	34
Kempe, Mr. A. B.	4	Peach, Dr. B. N.	D 152
Kendall, Prof. P. F.	B 89	Penck, Prof. A.	E 160
Kennedy, Sir Alexander ...	5	Penck, Fräulein	E 162
Kirsopp, Mr. J.	J 267	Poëta, Prof. F.	G 236
Kitchin, Dr. F. L.	G 230	Pollard, Mr. J.	L 280
Knowles, Sir Lees	31	Postlethwaite, Mr. J.	L 278
Kolderup, Dr. C. F.	D 136	Potter, Prof. M. C.	A 57
		Prain, Lt.-Col. E. D.	A 59
La Touche, Mr. T. D.	A 52	Pratt, Rev. C. T.	G 221
Lacroix, Prof. A.	D 137		
Lacroix, Mme.	D 139	Quilliam Bey, Dr. W. H. ...	H 256
Lapparent, Prof. A. de	11		
Lapworth, Dr. A.	E 180	Raisin, Miss C. A.	F 197
Lapworth, Mrs. A.	E 182	Reusch, Dr. H.	47
Lapworth, Prof. C.	25	Reynolds, Prof. S. H.	B 100
Lapworth, Mrs. C.	G 239	Rickman, Mr. T. M.	A 54

Table and Seat.		Table and Seat.	
Kelly, Mr. F. P.	K 271	Todd, Dr. J. J. H.	15
Kennedy, Mr. N. F.	M 246	Tomlin, Prof. P.	20
Kilgus, Dr. H. D.	D 115	Thackeray, Rev. F. St. J. ...	A 77
Kings, Mr. A. W.	C 112	Thompson, Dr. A.	F 196
Knapton, Prof. A.	15	Thompson, Mr. F. R.	L 279
Kramer, Mr. F. W.	F 138	Thurston, Dr. Th.	B 25
		Thurston, Prof.	B 25
Kull, Mr. R.	B 34	Tiedeman, Mr. R. H.	B 68
Kull, Dr. A. E.	H 257	Tietze, Dr. E. E. A.	7
Kull, Dr. D. H.	A 62	Tietze, Dr.	E 161
Sederholm, Dr. J. J.	44	Traquair, Dr. R. H.	35
Sell, Prof. H. G.	E 175		
Seeley, Mrs.	E 175	Ussher, Mr. W. A. E.	H 251
Seward, Prof. A. C.	A 78	Ussher, Mrs.	H 251
Shakelton, Mrs.	C 131	Ussher, Prof. N. V.	45
Simpson, Mr. W.	H 247		
Simpson, Prof. H.	47	Vélain, Prof. C.	E 164
Skouphos, Prof. T. G.	C 110		
Slater, Miss I. L.	E 185	Walther, Prof. J.	D 146
Sollas, Prof. W. J.	28	Walther, Frau	D 146
Spencer, Mr. L. J.	G 225	Wardle, Sir Thomas	39
Spencer, Mrs.	G 225	Watts, Prof. W. W.	E 189
Spencer, Rev. L. C.	H 269	Wichmann, Prof. A.	D 155
Spengler, Mr. W. J.	A 70	Wieland, Dr. G. R.	A 69
Steenstrup, Dr. K. J. V. ...	41	Williston, Prof. S. W.	E 171
Steinmann, Prof. G.	D 141	Winwood, Rev. H. H.	G 237
Stevenson, Prof. J. J.	19	Woods, Mr. H.	E 169
Stobbs, Mr. J. T.	J 265	Woodward, Dr. A. S.	56
Stracey, Mr. B.	B 90	Woodward, Dr. Henry	G 240
Strahan, Dr. A.	D 159	Woodward, Mr. H. B.	F 219
Strangways, Mr. C. Fox ...	E 179	Woodward, Miss	F 212
Stratford, Prof. V.	G 232		
		Young, Mr. G. W.	H 259
Tarr, Prof. R. S.	F 211		
Tchernyschew, Dr. Th.	18	Zirkel, Prof. F.	2

After reading a number of letters and telegrams which he had received, the PRESIDENT proposed the toast of the King, and followed it by the toast of the Heads of Foreign States. Prof. A. DE LAFRANKE then rose, and gave the toast of the Geological Society of London in the following words, coupling with the toast the health of the President :—

Messieurs et chers collègues—

C'est une mission bien agréable à remplir, que celle qu'on m'a fait la faveur de me confier, de vous inviter à lever vos verres en l'honneur de la Société géologique de Londres.

Je dis 'en son honneur' et non 'à sa santé' : car, lorsqu'une institution après cent années d'existence laisse voir de tels signes de jeunesse, de puissance, et de prospérité, ce serait lui faire injure si l'on semblait mettre en doute au instant son aptitude à traverser brillamment de nouveaux siècles.

Ce que nous avons le devoir de lui apporter aujourd'hui, c'est un hommage sans réserve, motivé par le bien que sa fondation a fait à notre science, au point qu'on pourrait dire que célébrer le centenaire de la Société géologique de Londres, c'est, du même coup, fêter le centenaire de la géologie.

Rapportez-vous, Messieurs, à ce qu'était, au début du siècle précédent, la connaissance de l'écorce terrestre. Cela vous sera facile, après l'admirable adresse que vous avez entendue aujourd'hui. Sur le Continent le nom de la géologie était à peine prononcé, et on faisait d'elle une simple annexe de la minéralogie; si bien qu'en 1803, lors de la reorganisation de l'Institut de France, personne ne crut commettre une injustice en n'accordant pas une représentation spéciale à cette science où Cuvier et Brongniart allaient bientôt s'illustrer.

Cependant, dès cette époque, de vrais géologues, parfaitement conscients de leur tâche, étaient à l'œuvre dans le pays de William Smith. Et en 1807, ils eurent une idée de génie, quand ils résolurent de se réunir périodiquement, non pour le simple plaisir de s'entretenir ensemble des questions qui les intéressaient, mais avec le dessein, formellement énoncé dans les *Transactions* de 1811, d'examiner jusqu'à quel point les vues émises en géologie par les auteurs étaient en conformité avec les faits que nous présente la nature.

Messieurs, c'était bien dans la patrie du Chancelier Bacon que devait légitimement s'élever cette résolution de soumettre systématiquement au contrôle inexorable de l'observation collective, des théories au jusqu'alors, si brillantes que fussent les synthèses d'un Buffon ou d'un Hutton, le rôle de l'imagination avait été prépondérant. Et c'était faire preuve au même temps que de génie, d'un esprit merveilleusement pratique, que de reconnaître que « plus que toute autre branche de nos connaissances, la géologie avait besoin de la coopération des individus. »

Ainsi l'immense mérite de Henssloagh et des amis qui, dès 1807, se sont groupés autour de lui, sera celui de savoir affirmer d'emblée le caractère éminemment social de notre science. Ce caractère allait bientôt ressortir avec plus de force, le jour où quatre ans après la reconnaissance officielle de l'Association fondée à Londres, la Société géologique de France, s'inspirant de ses destinées, inscrirait dans ses statuts l'obligation de ces réunions académiques, où les problèmes de la science devaient être étudiés et discutés sur le terrain même, chacun apportant librement, avec le fruit de son

expérience personnelle, le tribut parfois inappréciable de son coup d'œil et de son jugement. Enfin cette sociabilité a reçu un couronnement définitif par l'institution des Congrès internationaux, où ce fécond échange s'est étendu à tous les pays, et où on a vu, dans les réunions fraternelles, la lumière jaillir, sur le terrain même, par ce précieux concours de tant de compétences diverses.

Oui, Messieurs, avant que les hommes politiques eussent commencé à préconiser l'arbitrage entre les nations, les géologues tenaient depuis longtemps leurs conférences de la Haye ; avec cette différence, qu'au lieu de vœux platoniques et dépourvus de sanction, nos délibérations ont déjà fait l'accord définitif sur mainte question controversée.

Mais la science n'a pas été seule à en tirer profit. Grâce à cette coopération fréquente, il a été donné aux géologues de constituer une corporation d'une nature spéciale, en raison de l'exceptionnelle cordialité qui règne entre ses membres. Ce n'est pas en vain qu'on prend l'habitude de travailler ensemble au grand air, mangeant à la même table, couchant sous le même toit, respirant en face de la libre nature la même atmosphère bienfaisante. Un tel exercice a vite fait de transformer les collègues en amis ; et ainsi se prépare efficacement l'union de tous les peuples, dans un même effort pour le bien général de notre espèce. C'est un véritable honneur pour nous de pouvoir nous dire les premiers pionniers de cette œuvre méritoire.

Or, à qui devons nous que cet avantage ait été si rapidement acquis, sinon au discernement et à la largeur de vues de nos illustres prédécesseurs, les fondateurs de la Société géologique de Londres ? En ouvrant la voie qui depuis lors a été si brillamment parcourue, ils ont bien mérité, non seulement de la science, mais de l'humanité entière.

Tel est donc l'hommage que nous venons leur rendre, dans un sentiment unanime de filiale reconnaissance. La Société fondée par Greenough et ses amis n'est pas seulement la première en date parmi les associations de géologues. Elle doit être regardée comme la mère et le modèle de toutes les sociétés similaires, qui toutes admirent sa prospérité, et rendent justice à la munificence avec laquelle elle répand ses bienfaits sur les géologues de tous les pays.

J'aime à le proclamer au nom de tous mes confrères du continent, et spécialement au nom de ceux dont l'activité a pour objet la partie méridionale du bassin *anglo-parisien*, cette unité géologique

si homogène, par laquelle il semble que la Providence se soit plu à préparer de longue date l'entente cordiale de deux grands peuples. Et s'il m'était permis, dans une circonstance aussi solennelle d'évoquer un souvenir personnel, j'oserais dire que je m'honore d'avoir été, il y a déjà plus de trente ans, de ceux qui ont pu démontrer au nom de la géologie, que la séparation établie par le détroit du Pas de Calais, entre la Grande Bretagne et la France n'était qu'une écorchure superficielle, au dessous de laquelle il est aisé de se frayer, à l'abri des tempêtes, un passage à travers les strates, si bien appropriées, du *chalk marl*; de telle sorte que, le jour où les deux pays seront d'accord pour le vouloir, rien ne sera plus facile que d'établir la jonction des chemins de fer de l'Angleterre avec ceux du Continent.

Mais, quelque soit le sort réservé à ce projet, ce qui est réalisé dès maintenant et acquis pour toujours, c'est l'union des intelligences et des cœurs sur le terrain de nos communes études. Honneur donc à la Société qui a été l'initiatrice d'un tel résultat!

Seulement, comme nous ne sommes pas de purs esprits, et que notre amour aime à quitter les abstractions pour se fixer sur des objets sensibles et tangibles, vous ne vous étonnerez pas, je pense, que je ne veuille point séparer la pensée de la Société géologique de Londres de celle de son Président d'aujourd'hui. Je vous demande donc la permission d'associer, dans un même toast, et la Société que nous fêtons et Sir Archibald Geikie, le vétéran de la géologie anglaise, l'éducateur, à la fois théorique et pratique, des géologues de son pays; l'homme qui a dirigé, avec tant d'autorité, les services du Geological Survey; l'écrivain dont la plume élégante a si bien fait valoir les charmes du sol natal, en montrant que la géologie n'enlève rien à la poésie des paysages; enfin le savant qui a su conquérir à notre science une si haute représentation dans les conseils de l'illustre Société Royale de Londres.

Messieurs, je lève mon verre en l'honneur de la Société géologique de Londres et de notre président, Sir Archibald Geikie, en disant à tous deux, du fond du cœur, 'Ad multos annos.'

The PRESIDENT, after expressing his thanks for the cordial way in which the toast had been proposed by his old friend Prof. de Lapparent and received by the company, passed on to contrast the present position of Geology with that in which the science stood a hundred years ago when the Society was founded. At

the beginning of the last century Geology had not yet established for itself a place within the recognized circle of the sciences. Its followers were comparatively few, and many of them were more addicted to speculation than to the careful observation and collection of facts. Like the cosmogonists who preceded them, they were fond of indulging in hypotheses as to what they supposed had been the history of our globe, and in so doing they too often set the laws of physics and chemistry at defiance. So much in their writings was entirely speculative, that they brought their study into not a little ridicule and contempt. It was as a protest against this tendency to mere speculation, and as an effort to concentrate attention upon the sedulous examination of the minerals and rocks of the earth's crust as records of the history of our globe, that the Geological Society was established. The handful of chemists and mineralogists who led the way in this enterprise set an example, the influence of which spread not only in this country, but all over the world. The claim of Geology to hold an honourable place among the observational sciences has now been amply vindicated, and at the close of a hundred years we see it established as a branch of liberal education and scientific research in the schools, colleges, and universities of all civilized countries. Its followers are no longer looked on by men of science as mere visionaries, but are welcomed and honoured as fellow-labourers in the advancement of natural knowledge. No better proof of this recognition could be cited than the fact that the Academy of Sciences of Paris has chosen a geologist, our Guest, Prof. de Lapparent, as one of its two permanent Secretaries, and that the Royal Society of London has also a geologist as one of its two Secretaries.

Remarking that the Geological Society is naturally proud of the share which it has had in the wonderful advance of Geology during the past hundred years, the President alluded to some of the more important services that it had rendered through the papers which it had published. He more particularly instanced the initiation of the pursuit of Glacial Geology, which followed from the essays and discussions before the Society in the year 1840, wherein Agassiz, Buckland, Lyell, Murchison, and others took part. Before that year the great Swiss glacialist met with but little support, and his views, even where they were partially accepted, were usually looked upon as applicable only to the Alps. But year by year the proofs came in rapid and overwhelming

succession that the phenomena were not a mere local development in Switzerland, but extended over a large part of the northern hemisphere. Another memorable new departure in geological investigation took its rise in the Society's rooms, when Sorby's famous contribution on the microscopic structure of minerals and rocks was read, which laid the foundations of modern Petrography.

From its start the Geological Society was not a mere local organisation, intent mainly upon the investigation of its own district or its own country. Not only had it always welcomed contributions from all parts of Britain and of the British Empire, but it gladly opened the pages of its publications for the reception of communications on the geology of all parts of the world. Delighting to associate in its membership geologists of other countries, it had created for them the classes of Foreign Correspondents and Foreign Members. In these lists will be found the names of most of the illustrious men of other countries by whom Geology has been more especially advanced. And, in bestowing the various Medals with which pious founders had entrusted it, the Society had never restricted them to its own fellow-countrymen, but had honoured itself by frequently awarding them to distinguished men of other countries. It had thus been keenly alive to the recognition of the brotherhood of science. And now, after the lapse of the first hundred years of its existence, it has the supreme gratification of witnessing the visible proof of the reality of that brotherhood in the large and thoroughly representative company which has come from so many and such distant lands to assist in the celebration of this Centenary. Probably never in the history of the science have so many geologists of eminence been gathered together. Their presence is gratefully welcomed as a token of their appreciation of the work which the Geological Society has accomplished in the past, and the memory of this occasion will encourage the Society to carry on its work in the same spirit of independence, earnestness, and sympathy which it has hitherto striven to maintain.

Prof. T. G. BONNEY proposed the toast of 'Universities and other Educational Institutions.' Prof. HERMANN CREDNER, of Leipzig, who responded to the toast in German, said that during the last ten years a number of high schools had taken up the study

of Geology and had become nurseries of the science. In many quarters of the globe appreciation was being shown for Geology, a matter for warm congratulation. Much had been done, not only by officials and professional geologists, but also by private students and teachers and by corresponding members of societies. But it was necessary that there should be cooperation among all interested in Geology, and for that reason he welcomed such an occasion as this and urged that all must work hand in hand for the future.

Prof. H. A. MIERS proposed the toast of 'Academies and Learned Societies,' to which Prof. C. BARROIS, of the Academy of Sciences, Paris, and the University of Lille, responded in French. He referred to what had been done for Geology by Great Britain, which had sent scientific missions throughout the world, had covered the British Isles with admirable Geological surveys, and had sent lovers of Geology into all lands, civilized and uncivilized. To accomplish that result it had been necessary to establish a union between the professional and the amateur geologists, and Great Britain was fortunate in having found men capable of presiding over that union, and of rendering it happy and fruitful. He saluted the Geological Society of London for its share in the work, because it was the first among the academies, and because it had been the example to all the others.

The toast of 'Geological Surveys' was proposed by Prof. C. LAPWORTH, who coupled with it the health of Prof. ALBERT HEIM, of Zürich. Prof. Heim, in reply, said:—

Mr. President, ladies and gentlemen,—

I had expected that the President would call upon the Delegate of the greatest Geological Survey in the world, who is present here to-night, to respond to Prof. Lapworth's toast and to thank him for the words in which he has proposed it. But he has willed otherwise, and invited the Delegate of one of the smallest of Geological Surveys to speak in reply.

But, small though it be in staff and in the area which it covers, I cannot admit that the Geological Survey of Switzerland is the smallest in scientific value; for we owe to the structure of our mountains a peculiar scientific interest. And, on looking over the series of fifty volumes and sixty-five maps that we have already published I venture to say that, in proportion to the size of our

country, we are not behindhand in the results achieved. It is in the meagre support which we receive that we find our chief difficulty in carrying out our work.

Without an office, museum, or laboratories; with a bare subsidy of £400, only recently raised to £800, to cover both investigation and publication; with no geologists to give their whole time to the work; have I not a right to say that we are the smallest Geological Survey? Everything that has been done has been of the nature of holiday-work, and it could only have been accomplished by personal sacrifice and unusual self-devotion.

In Switzerland, as elsewhere, the good ground in which such work can grow is found in the Scientific Societies, and especially in the Geological Societies, so many of which are fostered by their various Governments. They are responsible for spreading among men, and for strengthening the conviction in the best of them, that the investigation of the earth-crust upon which we live is a high duty. Not only is it of vast practical use for our material prosperity, but, from a much higher point of view, it is part of the general duty of the human mind to investigate and search after *Wahrheit*.

I believe that I am speaking on behalf of all the Delegates of Geological Surveys in thanking all Societies of Natural Science, and especially Geological Societies throughout the world, for their devotion in impressing upon peoples and Governments that geological investigation is a necessity and a duty.

I close my few words with the wish that the Geological Societies of all the world may live and flourish, and grow in prosperity for ever and ever.

Prof. T. McKENNY HUGHES then proposed the toast of 'Engineering and Mining Institutions,' to which Prof. RICHARD BECK, of Freiberg, responded.

The toast of 'Delegates and Other Guests' was proposed by Dr. J. E. MARR, and the response was made by Prof. J. J. STEVENSON, of New York, in the following terms:—

Sir Archibald, ladies and gentlemen,—

Several speakers this evening have called your attention to the presence of men from many lands, of many tongues, of many modes of thought; but amid this Babel of tongues, this medley of

race, there is one common language, one common tie, for we are here as members of one family, assembled to honour the Centenary of a dear old mother.

There was Geology, there were Geologists, before 1807, but with the founding of this Society the era of speculation ended, that of investigation began, and Geology, as we now understand it, was born.

In America, we owe our early advance to men trained in this school. I take my country as a typical example, being more familiar with its detailed history than with that of others. While the founders of this Society were planning its organisation, that sturdy Scot, William Maclure of Ayr, was threading his way along and across the Eastern Appalachians in quest of truth. Two years afterwards, in 1809, he published his map and laid the foundation of American geology on which, at once, many young men began to build. But the problems presented by the narrow coastal strip were too complicated to be solved by mere amateurs, and, within little more than a decade, interest in geology was almost extinct. Then Richard C. Taylor of your Society, pupil and relative of William Smith, came to the Pennsylvania coalfields. Of unbounded energy and infectious enthusiasm, he so awakened interest that it spread quickly into adjacent States and led to the great surveys of Virginia, Pennsylvania, and New York. As those surveys approached completion, Lyell made his memorable journeys to America and gave the benefit of his wide experience and mature judgment to the young men charged with the surveys. When James Hall, the field-work ended, undertook the palæontology in 1843, he was far from any with whom to consult, and the limited literature then existing was almost wholly beyond his reach. He found his inspiration in Murchison's 'Silurian System', and for several years, as appears from a voluminous correspondence still existing, Murchison was his guide.

As for America, so for most lands. Men of your Society, apostles of the new creed, were scattered abroad and made disciples everywhere. The early development of Geology along proper lines was due to their efforts, so that in a broad sense we must look upon ourselves as children of your Society. But, while you gave us much, we have brought much in return: the magnificent work of geologists in all lands testifies that we have not proved unprofitable children. Working independently, separated by political boundaries or even by oceans, we remember the unity of

our origin, and you, Sir Archibald, President of this Society, belong as much to us of other lands as to Britain itself.

We, the delegates and guests, do well to rejoice that your Society, though a hundred years old, is still in the early springtime of life. Our prayer is that you may drink so deeply at the fountain of eternal youth that, for a geological period, you may be a factor in advancing man's welfare in Europe ; and we trust that, through your influence, may be postponed for many centuries that frightful day, when the New Zealander, seated on a pier of London Bridge, will contemplate the ruins of Britain's empire.

The last toast was that of the 'Ladies,' which was proposed by Prof. W. W. WATTS. Prof. JOHANNES WALTHER, of the University and Director of the Mineralogical Institute, Halle a. d. Saale, responded in German.

During the evening, the Foreign and Colonial friends of Prof. T. RUPERT JONES, who was unable to be present on account of his age and infirmity, drew up and forwarded to him a memorial signed by a large number of those present.

CHAPTER VI.

VISITS AND CONVERSAZIONE.

DINNER OF THE GEOLOGICAL SOCIETY CLUB.

FRIDAY, SEPTEMBER 27TH, 1907.

THE morning and afternoon of Friday were devoted to a series of visits to Museums and other places of interest in London. These were not confined to Guests, but were thrown open to all Fellows of the Society. As applications were received up to Thursday evening and 'allotments' were issued through the post-office in the Reception Room on Friday morning, it is feared that some Visitors were unable to make use of the arrangements that had been devised for them.

British Museum.

The whole of the Museum was of course open, but in the morning by the kindness of the Keeper, the Department of Prehistoric Antiquities was shown to the Visitors from the Geological Society. Several Visitors and Fellows applied to visit this portion of the Museum.

In the afternoon, the Keeper of the Egyptian and Assyrian Antiquities placed his services at the disposal of the Visitors.

British Museum—Natural History.

In the morning, special attention was devoted to the Department of Mineralogy and Petrology, with the kind assistance of the Keeper and under the guidance of Dr. Prior and Mr. Spencer.

In the afternoon, the Palæontological Galleries were visited under the guidance of Dr. A. Smith Woodward and Dr. F. A. Bather.

Museum of Practical Geology.

At the Museum of Practical Geology, 28 Jermyn Street, the morning visit was, by the invitation of Dr. J. J. H. Teall, devoted to a study of the Palæontological Collections. Dr. Kitchin, Mr. Allen, and Dr. Thomas kindly rendered assistance in directing.

In the afternoon, special attention was given to the Physical and Petrological side under the guidance of Dr. Teall, Dr. J. S. Flett, and other Members of the Geological Survey. Visitors and Fellows who attended were entertained at tea in the Museum by Dr. Teall.

Victoria and Albert Museum.

A small party, in the morning, visited first the Arts Collections, then the Machinery Department, and finally the Science Collections of the Museum. Every facility had been given to Prof. Watts, who acted as Guide, by the Director of the Science Museum, Mr. W. J. Last.

In the afternoon, a much larger party covered the same ground under the same Guide. The visit concluded in that portion of the Western Galleries in which the Geological Department of the Royal School of Mines is located, where Prof. Watts entertained the Visitors at afternoon tea.

St. Paul's Cathedral.

A most enjoyable visit to St. Paul's Cathedral was arranged in the afternoon by Dr. Michael Grabham, the Delegate of the Royal College of Physicians. The Guests were received in the Chapter House, and then conducted over the Cathedral by Canon H. Scott Holland, the canon in residence, who explained the principal features of interest, and gave some of the results of recent inquiries into the stability of the building. The organ was played during the visit by Dr. Grabham. The Dean was present, and though not sufficiently well to accompany the party, he received some of the guests in the vestry. The Visitors included the Lord Mayor, the President of the Society, the Treasurer and Registrar of the Royal College of Physicians, Professors Beek, Conwentz, Drygalski, Penck, Rothpletz, Stevenson, Tarr, and Walther, Dr. Whitman Cross & Mrs. Cross, Mr. Denham, Dr. Fourmarier, Dr. Arnold Hague,

Dr. Moberg, and Dr. & Mme. Skouphos. At the close of the inspection the Visitors were entertained at tea in the Chapter House by Dr. Grabham.

Museum of the Royal College of Surgeons.

The President of the Royal College of Surgeons most kindly wrote, offering to have the Museum of the College thrown open to the Society. As, however, it was somewhat late to make arrangements, and as it would have necessitated opening the Museum in vacation time, the Council of the Geological Society had regretfully to decline this invitation.

DINNER OF THE GEOLOGICAL SOCIETY CLUB.

The Geological Society Club dined at 6.15 P.M. on Friday evening at the Criterion Restaurant, and invited all the Foreign and Colonial Visitors to join them. The proceedings were, as is customary at the Club, not of a formal nature; the Toast-list was a small one, including only the King, the Society, and the Visitors, the reply to the last being by Dr. E. E. A. Tietze. During the course of the dinner a memorial, signed by his numerous friends among the Fellows and their Guests, was sent to the veteran Dr. Sorby. The following list includes the Official Visitors, the Members of the Club present, and their private Guests:—

MEMBERS OF THE CLUB.

Sir ARCHIBALD GEIKIE, K.C.B., President, in the Chair.

Mr. H. H. ARNOLD-BEMROSE.
The Rev. Prof. T. G. BONNEY.
Prof. W. BOYD DAWKINS.
Dr. J. S. FLETT.
Mr. C. FOX STRANGWAYS.
Prof. E. J. GARWOOD.
Mr. A. HARKER.
Mr. F. W. HARMER.
The Rev. E. HILL.
Prof. T. McKENNY HUGHES.
Prof. J. W. JUDD, C.B.
Dr. F. L. KITCHIN.
Mr. G. W. LAMPLUGH.
Prof. C. LAPWORTH.
Dr. J. E. MARR.
Prof. H. A. MIERS.

Mr. H. W. MONCKTON.
Mr. E. T. NEWTON.
Mr. F. G. HILTON PRICE.
Mr. F. W. RUDLER, I.S.O.
Prof. H. G. SEELEY.
Prof. W. J. SOLLAS.
Capt. A. W. STIFFE.
Dr. A. STRAHAN.
Dr. J. J. H. TEALL.
Mr. R. H. TIDDEMAN.
Prof. W. W. WATTS.
Mr. W. WHITAKER.
The Rev. H. H. WINWOOD.
Dr. A. SMITH WOODWARD.
Mr. H. B. WOODWARD.

GUESTS.

Prof. F. D. ADAMS.
 Dr. JOSÉ G. AGUILERA.
 Prof. DON EDUARDO AGUIRRE.
 M. MAURICE M. ALLORGE.
 Dr. H. M. AMI.
 Prof. J. GUNNAR ANDERSSON.
 Prof. CHARLES BARROIS.
 Mr. H. J. L. BEADNELL.
 Prof. R. BECK.
 Mr. G. F. BECKER.
 Mr. L. L. BELINFANTE.
 Dr. F. W. BENNETT.
 Prof. A. BERGEAT.
 Prof. A. BIGOT.
 Dr. K. O. BJÖRLYKKE.
 Prof. MARCELLIN BOULE.
 Prof. W. S. BOULTON.
 Prof. W. C. BRÖGGER.
 Dr. L. CAREZ.
 Prof. W. BULLOCK CLARK.
 Prof. JOHN M. CLARKE.
 Prof. H. CONWENTZ.
 Geheimrath Prof. H. CREDNER.
 Dr. WHITMAN CROSS.
 Prof. W. M. DAVIS.
 Mr. H. G. DENHAM.
 M. GUSTAVE F. DOLLFUS.
 Prof. LOUIS DOLLO.
 Prof. E. D. VON DRYGALSKI.
 Dr. J. W. EVANS.
 Prof. E. FALLOT.
 Mr. W. G. FEARNSIDES.
 M. P. FOURMARIER.
 Prof. JAMES GEIKIE.
 Prof. J. GOSSELET.
 Prof. C. GOTTSCHÉ.
 Dr. M. GRABHAM.
 Dr. W. A. J. M. VAN WATERSCHOOT
 VAN DER GRACHT.
 Dr. ARNOLD HAGUE.
 Prof. ÉMILE HAUG.
 Prof. ALBERT HEIM.
 Dr. JOHN HORNE.
 Mr. J. ALLEN HOWE.
 Dr. W. F. HUME.

Prof. J. P. IDDINGS.
 M. BELA DE INKEY.
 Prof. OTTO JEKEL.
 Dr. B. DAYDON JACKSON.
 Prof. E. KAYSER.
 Dr. C. F. KOLDERUP.
 Prof. A. LACROIX.
 Prof. A. DE LAPPARENT.
 Prof. C. K. LEITH.
 Dr. PAUL LEMOINE.
 Prof. F. LEWINSON-LESSING.
 Dr. MARSDEN MANSON.
 M. EMMANUEL DE MARGERIE.
 Prof. J. C. MOBERG.
 Prof. G. A. F. MOLENGRAAFF.
 M. MICHEL F. MOURLON.
 Prof. A. G. NATHORST.
 Mr. R. D. OLDHAM.
 Prof. F. OMORI.
 Prof. A. PENCK.
 Dr. HANS REUSCH.
 Mr. A. W. ROGERS.
 Prof. AUGUST ROTHPLETZ.
 Mr. WALTER ROWLEY.
 Prof. HJALMAR SJÖGREN.
 Prof. TH. G. SKOUPHOS.
 Dr. K. J. V. STEENSTRUP.
 Prof. GUSTAV STEINMANN.
 Prof. J. J. STEVENSON.
 Prof. VLADISLAV SZAJNOCHA.
 Prof. R. S. TARR.
 Dr. TH. TSCHERNYSCHEW.
 Prof. P. TERMIER.
 Dr. A. THEVENIN.
 Mr. J. ALLAN THOMSON.
 Dr. TH. THORODDSSEN.
 Dr. E. E. A. TIETZE.
 Mr. T. H. D. LA TOUCHE.
 Prof. N. V. USSING.
 Prof. CHARLES VÉLAIN.
 Prof. J. WALTHER.
 Prof. A. WICHMANN.
 Prof. S. W. WILLISTON.
 Geheimrath Prof. F. ZIRKEL.

THE CONVERSAZIONE.

The Geological Society held an Evening Reception from 9 to 11.30 at the British Museum—Natural History, by kind permission of the Trustees of the British Museum. The Central Hall, North Hall, Bird Gallery, and Reptile Gallery were thrown open on the Ground Floor, and the East and West Corridors on the First Floor. The Okapi, recently obtained by Major Powell-Cotton from the Ituri Forest, was on view; and also a special exhibition of specimens,

manuscripts, and other objects relating to Linnæus, arranged in celebration of the bicentenary of Linnæus's birth.

Light refreshments were served in the Refreshment Room at the top of the Central Staircase, in the East Corridor, and in the Bird Gallery on the Ground Floor. The String Band of the Royal Engineers, under the conductorship of Mr. Neville Flux, and by kind permission of Col. F. Rainsford Hannay, R.E., performed during the evening. The music of the programme was selected to represent nearly as many nationalities as the Visitors.

Over 500 were present, this number including Official Visitors, Officers of the Natural History Museum, and Fellows and their friends.

CHAPTER VII.

EXCURSIONS AND VISITS.

SATURDAY, SEPTEMBER 28TH, 1907.

THIS day was entirely devoted to excursions, of which seven had been planned by the Committee. The weather was fortunately very fine and bright, so that the excursions proved most enjoyable.

In spite of the fact that many of the Visitors were tired with their journey and the work of the preceding days, the attendance at most of the excursions was very good. Numerous Fellows and their friends joined in the excursions, as well as the Foreign and Colonial Visitors.

The following is a list of the Excursions :—

EXCURSION.	DIRECTORS.
1. Wellingborough & Northampton District. <i>Lower Oolitic Formations including the Northampton Iron-Ore.</i>	Mr. H. B. Woodward, Mr. Beeby Thompson.
2. Aylesbury. <i>Upper Jurassic & Lower Greensand.</i>	Dr. A. Morley Davies.
3. Dover. <i>Chalk.</i>	Mr. William Hill.
4. Epsom, Box Hill, & Reigate. <i>Upper Cretaceous.</i>	Dr. C. G. Cullis, Mr. G. E. Dibley, Mr. G. W. Young, Prof. W. W. Watts.
5. Reading. <i>Paleolithic Gravel & Eocene.</i>	Mr. H. W. Monckton, Mr. O. A. Shrubsole, Mr. H. J. O. White.
6. Erith & Crayford. <i>Eocene & Pleistocene.</i>	Mr. A. N. Leach, Mr. W. Whitaker.
7. Sudbury. <i>Pliocene & Pleistocene.</i>	Prof. J. W. Gregory.

1. *Wellingborough.*

This excursion started from Isham Station, and drove over a considerable area in Northamptonshire, paying special attention to the Ironstone Beds of the Northampton Sand, but seeing, in addition, the Lincolnshire Oolite, the Upper Estuarine Beds, the Great Oolite Limestone and Clay, and the Cornbrash. The party witnessed the smelting of the ore, and also 'direct casting' of the metal. They were entertained at tea by Mr. Butlin, the Managing Director of the Irthlingborough furnaces at Wellingborough. The following were among the Guests present at this excursion:—Prof. Adams, Prof. Beck, Prof. de Dorlodot, Dr. Kolderup, Prof. Leith, Mr. La Touche, and Prof. McWilliam.

2. *Aylesbury.*

The Oxford Clay, Ampthill Clay, Lower Kimeridge Clay, Hartwell Clay, Portland Sands, Portland Stone, and Lower Greensand were seen during this excursion in the neighbourhood of Haddenham, Wotton, and Waddesdon Manor. There were present:—Dr. Aguilera, Prof. Welsch, Mlle. Welsch, and Dr. Wieland.

3. *Dover.*

The state of the tide made it difficult to arrange an entirely satisfactory excursion, so far as the exposure of the zones in the Chalk was concerned; but the following Cretaceous Formations were seen:—Folkestone Beds, Gault, Chloritic Marl, Lower and Middle Chalk. The excursion concluded with a visit to the works of the Channel Tunnel, so often alluded to in the Addresses of the Foreign Delegates. The following were present:—Prof. A. Bergeat & Frau Bergeat, Mr. R. H. Chapman, M. Bela de Inkey, and Dr. Marsden Manson.

4. *Epsom, Box Hill, and Reigate.*

Mr. G. W. Young was so good as to join in the Direction of this Excursion. The party drove up the dip-slope of the Chalk from Epsom to Headley, climbed Box Hill, descended the face of the Escarpment, and drove to Red Hill. A splendid view of the Weald and the gorge of the Mole was obtained, and the chief

Formations seen were the Gault and Upper Greensand, and several of the zones of the Lower and Middle Chalk. There were present, among others:—Mr. L. L. Belinfante, Dr. Bennett, Prof. Credner, Mr. Denham, Miss Drew, Prof. Molengraaff, Prof. Wichmann, and Prof. Walther. The party were entertained at tea by Prof. Watts at Reigate, at the close of the Excursion.

5. *Reading.*

This excursion was planned by the Geologists' Association, who kindly invited the Society and its Guests to join them. The party numbered about fifty, the following being among the Geological Society's Visitors:—M. Dollfus, Prof. Gottsche, M. Mourlon, Dr. Quilliam Bey, Prof. Ussing, and Dr. Waterschoot van der Gracht. A full account of the excursion will be found in the 'Proceedings of the Geologists' Association' vol. xx (1907) pp. 200–208. The Museum at Reading was visited and the following Formations were subsequently seen:—The Upper Chalk, the Reading Beds, the London Clay, and the Plateau Gravels. In moving a vote of thanks to the Geologists' Association, M. Dollfus kindly invited the Association to make an excursion to the Paris Basin, an invitation which was accepted, the excursion being carried out at Easter 1908 under the leadership of M. Dollfus.

6. *Erith and Crayford.*

This party travelled to Erith, and returned from Dartford. The Formations visited included the Thanet Sands, Woolwich Beds, Blackheath Beds, and London Clay. A Palæolithic floor of cemented chalk-breccia was also seen, covered by Pleistocene River-Drift and Brickearth, some of it rich in shells and bearing bones and teeth of Pleistocene mammals. Among the Guests were the following:—Mr. C. W. Anderson, Mr. Hinch, Prof. Penck.

7. *Sudbury.*

The sequence exposed at Sudbury showed the Upper Chalk in many sections, the Thanet Sands, Reading Beds, and London Clay, the Red Crag, and Pleistocene Beds including Glacial gravels, brickearths, and boulder-clays, High-level Gravel, and Alluvium and Palæolithic Gravels of the Stour Valley. Dr. & Mrs. J. S.

Holden kindly entertained the party at tea at Sudbury. The Visitors included Miss Mary K. Andrews, Miss K. Andrews, M. Allorge, Mr. Kitson, Dr. & Mme. Lemoine, Prof. Moberg, Prof. Steinmann, and Dr. A. Thevenin.

SUNDAY, SEPTEMBER 29TH, 1907.

The weather on this day was locally unfavourable for an excursion. At first it was so foggy that the splendid view over the Weald was obscured. Rain fell before midday, but did not clear the fog. In the afternoon the weather cleared up a little, but the air was still very hazy.

Excursion to Caterham.

The only field-excursion planned was to Caterham, Godstone, and Tilburstow Hill, under the direction of Mr. W. Whitaker. The attendance amounted to fifty or sixty, among whom were the following Visitors:—Dr. Aguilera, Dr. Ami, Dr. C. W. Anderson, Prof. Baltzer, Mr. Belinfante, Dr. Bennett, Dr. Björlykke, Mr. Denham, M. Dollfus, Mr. Hinch, Dr. Hinde, Mr. Kirsopp, Mr. Kitson, Dr. Kolderup, Dr. & Mme. Lemoine, M. Mourlon, Prof. Molengraaff, Prof. Pavlow, M. Peyer, Prof. Rothpletz, Prof. & Mme. Skouphos, Dr. Thevenin, Prof. Tarr, Prof. Wichmann, Miss Whitley, and Dr. & Mrs. A. Smith Woodward. The chief Formations seen were the Hythe, Sandgate, and Folkestone Beds of the Lower Greensand, the Upper Greensand, the Chalk, and an outlier of Blackheath Pebble-Beds. Mr. Whitaker kindly entertained the party at lunch at Godstone, and at tea at Oxted. M. Michel Mourlon at the close of the excursion addressed the meeting, and moved a vote of thanks.

Visit to the Zoological Gardens.

The Council of the Zoological Society most kindly threw open the Zoological Gardens in Regent's Park to the Fellows of the Society and their Guests on Sunday at 11 A.M., and the Secretary, Dr. P. Chalmers Mitchell, was so good as to make all necessary arrangements. About forty Visitors and Fellows inscribed their names for this visit, and the Society is much indebted to Mr. W. Pycraft and Dr. Henry Woodward, who rendered kind assistance in directing those who visited the Gardens.

Visit to the Royal Botanic Gardens, Kew.

The Curator of the Royal Botanic Gardens, Lieut.-Colonel Prain, kindly arranged for a party to visit the Gardens on Sunday, and between thirty and forty Fellows and Guests accepted the invitation. Unfortunately Col. Prain was prevented by an accident from being present; but Prof. Oliver and Prof. Judd kindly gave assistance to the party. Prof. Judd was good enough to entertain them at tea.

MONDAY, SEPTEMBER 30TH, 1907.

On Monday morning the gathering in London came to an end. But the whole of the Foreign and Colonial Guests, with the exception of those who were compelled by pressing engagements to return to their own countries, were entertained for some days longer at the Universities of Oxford and Cambridge. Prof. Solla has been so good as to supply the account which follows of the Oxford visit, and Dr. J. E. Marr has kindly performed the same service for Cambridge.

CHAPTER VIII.

OXFORD AND CAMBRIDGE.

SEPTEMBER 30TH TO OCTOBER 3RD, 1907.

The University of Oxford.

THE Guests who visited Oxford were received on Monday morning (September 30th) at the railway-station by the Hospitality Committee, who conducted them to their quarters in the Colleges or in the homes of private residents. In the afternoon, at a Congregation held in the Sheldonian Theatre, the Honorary Degree of Doctor in Sciences was conferred on Charles Barrois, Professor of Geology in the University of Lille; Albert Heim, Professor of Geology in the Polytechnic School and the University of Zurich; Alfred Lacroix, Professor of Mineralogy in the Museum of Natural History, Paris; Albrecht Penck, Director of the Institut für Meereskunde, Berlin; Hans Reusch, Director of the Geological Survey of Norway; and Geheimrath Ferdinand Zirkel, Professor of Mineralogy and Geognosy in the University of Leipzig.

*Laudationes Doctorum in Scientia Honoris Causa Creatorum**A.D. II. Kal. Oct. MCMVII. Ab AUGUSTO LOVE**Philosophiæ Naturalis Professore Sedleiano Recitatæ.*

Aristoteles auctor est ubi hodie terra sit fuisse pontum, ubi pontus terram. Has vicissitudines testantur ipsa e quibus terra constat elementa, *φωρίητα ζυρεοῖσι*, sed multorum operam rei ubique incumbentium requirementia ut recte intelligantur. Cum harum rerum investigatores unum in locum aliquando congregari soleant, quo melius quid profectum sit recognoscant, quid egendum sit deliberent, paucos ex eiusmodi conventu laudem singularem adeptos hodie ornat Academia nostra.

CHARLES BARROIS.

Inter Gallos qui geologiæ student fere illustrissimus est CAROLUS BARROIS. Qui vir cum longos saxorum tractus scrutaretur, aliam

superficiei structuram esse vidit, aliam medullarum : unde duo saxorum genera distinguere potuit, hæc ignea vi conflata, illa sub vadis, quibus Galliae pars magna olim opplebatur, sensim concreta. Idem cretæ naturam rimatus, quæ apud nos et apud Gallos perexiguo freto divisos invenitur, nova indicia nactus est unde maris lati et profundi, quo utraque terra olim tegebatur, et incessum et regressum lentum ostenderet.

ALBERT HEIM.

Qui hodie de vi occulta qua montium iuga super planitiem elata fuerint optime disserunt auctorem sequuntur ALBERTUM HEIM. Hic ille est Alpium suarum investigator qui, cum singulorum ingorum, e quibus hæc vasta compages constat, anfractus ramosque perlustrasset, terræ defectus quibus hæc regiones aliquando vexantur, concretas glaciei moles quibus superiora vallium obsidentur, prona montium obteguntur, diligentissime observasset, descriptionem Alpium tabulis pulcherrimis expressam confecit, laboris et fructum et testimonium non penitendum.

ALFRED LACROIX.

Saxorum ignea vi conflatorum varia genera distinguere et quasi in classes distribuere potuit ALFREDUS LACROIX. Hic ille est qui quattuor abhinc annos monte Pelco vi immani convulso a Galliae gubernatoribus eo missus est ut nubium ardentium naturam cognosceret : qua in legatione valde periculosa cum appropinquanti exitium flammæ minarentur, mariti virtutem æquavit coniux, quam honoris causa nomino, periculorum olim, nunc laudis socia. Ne multa. Felicissime rem egit vir fortis et sagax, qui harum nebularum natura bene explorata reversus est.

ALBRECHT PENCK.

Intercessisse tempora quædam cum terra summo frigore oppressa fuerit nemo nescit. Ultimam quidem ex his quasi periodis, quæ una erat e pluribus quas hic orbis terræ passus est, ex quo animantium sæcula exorta sunt, plurimi pertractaverunt, nemo ex his qui hodie Europam incolunt melius quam ALBERTUS PENCK. Cum enim hæc periodo exeunte hominem super agros caput extulisse constet, hic noster exstitit qui humani generis vetustatem ultimam illustraret, cum inter variarum gentium instrumentis lapideis utentium tempora et eventus quibus vasti Europæ tractus glacie purgarentur rationem intercedere doceret.

HANS REUSCH.

De Scandinaviæ geologia optime egit HANS REUSCH. Qui vir, cum in Norvegia saxa quædam invenirentur innumerabilibus ante sæculis mari terram operiente sensim concreta, deinde vi ignea adeo

liquefacta et mutata ut nulla omnino animalium vestigia exhiberent, ipse rationes novas commentatus eiusmodi indicia deprehendit, unde saxorum ætatem colligere potuit. Ostendit etiam Norvegiam vastissimis glaciei molibus antiquitus fere obtectam esse, ex quo patet etiam in vetustate ultima magnis caloris et frigoris vicibus obnoxiam fuisse terram.

FERDINAND ZIRKEL.

Qui illud Scientiæ Naturalis genus pertractant quod ad metallorum saxorumque structuram pertinet FERDINANDO ZIRKEL fere omnia accepta referenda censent, cum microscopo, ut cum physicis loquar, hac in re primus usus sit. Neque satis erat ei nova huic rei studentibus subsidia parare, ipse enim in hoc genere plurimum profecit, cuius doctrinam et peritiam testatur maximus ille de Petrologia liber luculentissime conscriptus.

On the evening of Monday, the Hospitality Committee received their Guests at a *Conversazione* in the Ashmolean Museum.

On Tuesday morning, after visiting the scientific collections in the University Museum, the Guests were taken round the Colleges and the University Buildings. In the afternoon they were received by Prof. and Miss Miers at a Garden Party at Magdalen College.

In the evening, Dinner was served in the Hall of University College, under the Presidency of the Vice-Chancellor. Speeches were made by the Vice-Chancellor, Prof. Gosselet, Prof. Barrois, Prof. Penck, Prof. Miers, and Prof. Sollas.

On Wednesday, Prof. Sollas led an expedition to Fawler and Stonesfield. The successive gravel-terraces of the Thames Valley were examined on the way, and the unconformity of the Inferior Oolite on the Lias was seen at Fawler. On the same day Mr. Arthur Evans entertained a party at his house on Boar's Hill, and exhibited Sir John Evans's collection of palæolithic implements.

The following were the Guests who visited Oxford:—Prof. Barrois, Prof. Bigot, Prof. Bergeat, Dr. Björlykke, Prof. Baltzer, Prof. J. M. Clarke, Dr. Whitman Cross, Prof. de Dorlodot, Prof. Gosselet, Prof. Haug, Prof. Heim, Prof. Jakel, Prof. Lacroix, Dr. Lemoine, Mr. P. McKellar, Prof. Moberg, Prof. Molengraaff, M. Mourlon, Prof. Omori, Prof. Penck, Prof. Reusch, Prof. Rothpletz, Prof. Skouphos, Prof. Termier, Dr. Thevenin, Prof. Vélain, Prof. Walther, and Prof. Zirkel.

The University of Cambridge.

A party of about sixty of those taking part in the Centenary Celebration visited Cambridge between September 30th and October 3rd. They were housed in several of the Colleges and in private houses.

On Monday, September 30th, the visitors were taken round the Colleges and principal University Buildings, and in the evening Prof. and Mrs. Hughes were At Home in the Sedgwick Museum, where a large party of Cambridge residents was invited to meet the visitors.

On Tuesday a Congregation was held in the Senate House, when the Honorary Degree of Doctor in Sciences was conferred upon Waldemar Christofer Brögger, Professor of Mineralogy and Geology in, and Rector of the University of Christiania; Hermann Credner, Director of the Geological Survey of Saxony and Professor of Geology in the University of Leipzig; Louis Antoine Marie Joseph Dollo, Professor of Biology and Curator in the Royal Museum of Natural History, Brussels; Albert Auguste de Lapparent, Professor of Geology and Mining in the Catholic Institute, Paris; and Alfred Gabriel Nathorst, Professor and Keeper of the Department of Fossil Plants in the State Museum of Sweden, Stockholm. The degree had likewise been granted to Geheimrath Heinrich Rosenbusch, Professor of Geology in the University of Heidelberg, but in his unavoidable absence it could not be conferred.

The Public Orator spoke as follows, in presenting to the VICE-CHANCELLOR the several recipients of honorary degrees on the occasion of the visit of the Guests of the Geological Society of London:

Dignissime Domine, Domine Procancellarie, et tota Academia.

Societatis Geologicae Londiniensis hospites, hesterno die ad nos paulisper advectos, omnes etiam nostrorum hospitum in numero libenter computamus; omnes, scientiarum in hac sede venerabili e tot orbis terrarum partibus praesentes, non sine fraterno quodam animi motu contemplamur. 'Saxa et solitudines voci respondent': quanto magis nos, litterarum humaniorum et scientiarum amore imbuti, eorum adventu vehementer commovemur, qui scientia quadam admirabili praediti, etiam ex ipsis

saxis rerum naturae veritatem extorquent! Hospitibus nostris omnibus patent hodie Musea nostra, patent Collegia nostra omnia, patent omnium corda. In hoc templo denique honoris, dum hospites nostros omnes, e tot terris advectos, ea qua par est observantia excipimus, nonnullos, gentis uniuscuiusque quasi legatos praecepuos, titulo nostro velut exempli causa decoramus, qui honos aliorum hospitum insignium praesentia illustratus, vestrum omnium plausu sine dubio comprobabitur.

WALDEMAR CHRISTOFER BRÖGGER.

Christiania ad nos misit Universitatis suae Rectorem, geologiae professorem insignem, qui patriae in rupibus et metallis explorandis non sine laude iamdudum exercitatus, Norvegiae australis praesertim de saxis igneis praeclare disputavit. Iuvat videre virum patriae devotissimum, virum Regni novi senatoribus adscriptum, virum denique gentis totius Universitatis legatum auspiciis optimis nominatum.

Doctorum nostrorum in serie primus hodie incedit WALDEMAR CHRISTOFER BRÖGGER.

HERMANN CREDNER.

Assurgit deinceps Saxoniae explorator indefessus, Universitatis Lipsiensis professor eximius, qui Germania e septentrionali oriundus, palaeontologiae imprimis usus auxilio, Saxoniae in saxis serie perpetua ordinandis diu feliciter occupatus est. Idem geologiae in elementis enarrandis quantum excellit! Rerum naturae in penetralibus suo Marte explorandis quam fortis est! Rerum naturae in miraculis et observandis et explicandis quam subtilis!

Praesentatur vobis Regni Saxonici unus e Consiliariis, geologiae professor Lipsiensis, HERMANN CREDNER.

LOUIS ANTOINE MARIE JOSEPH DOLLO.

Progreditur proximus Musei Bruxellensis curator sollertissimus, vir in palaeontologia vertebrata (ut aiunt) investiganda diligentissimus. Meministis arte quali, ossibus immensis ordine apto collocatis, bestiam illam immanem, *Iguanodon Bernissartensem*, in speciem suam pristinam restituerit, cuius effigiem accuratissime expressam, et zoologiae in Museo nostro positam, Belgarum Regis liberalitati acceptam rettulimus.

Nostri in Regem illum animi grati testimonium hodie sine dubio libenter audiet unus e ministris eius fidelissimis, LUDOVICUS DOLLO.

ALBERT AUGUSTE DE LAPPARENT.

Francogallorum respublica maxima, vicinitatis vinculis nobiscum consociata, trans fretum angustum, nonnullis tam formidolosum, ad litora nostra legatum transmisit acceptissimum. Hospes autem noster, qui Normannorum in provincia superiore vallem quandam viridem olim ab oceano denudatam penitus perscrutatus est, in Instituto Catholico Parisiensi geologiam praeclare proficitur. Scientiae vero illius in Actis edendis diu occupatus, Scientiarum ab Academia, viri magni in locum, epistolarum minister perpetuus nuper est electus. Idem stili lucidi perspicuitate et verborum aptorum venustate insignis, opus ingens, summi laboris, summi acuminis monumentum, scientiae suae studiosis dedicavit, cuius in ipso limine professorem quendam Germanum, operis tanti aemulum generosissimum, aperte atque ingenue collaudat, qui, tempore eodem, laudis titulo eodem a nobis iure optimo exornatur.

Laudis eiusdem socius merito declaratur ALBERTUS AUGUSTUS DE LAPPARENT.

ALFRED GABRIEL NATHORST.

Germaniae quidem e legatis alterum hodie non sine dolore desideramus, Scandinaviae vero legatum alterum non sine gaudio salutamus. Salutamus professorem, cuius Regem illustrem inter doctores nostros iamdudum libenter numeravimus, cuius popularem insignem, Linnaeum, cum orbe terrarum toto nuper celebravimus. Hodie vero Florae antiquae potius quam hodiernae antistitem decoramus, qui scientiarum ardens amore, saepenumero etiam caeli arctoi frigora fortiter toleravit. Talium virorum auxilio vetera illa poëtae Romani verba denuo vera redduntur :

‘Venient annis saecula seris,
Quibus Oceanus vincula rerum
Laxet, et ingens pateat tellus,
Tethysque novos detegat orbes,
Nec sit terris ultima Thule.’

Interim velut ultimam Thulen hodie nobis repraesentat doctorum nostrorum illustrium in serie supremus, poli arctoi indagator audax, ALFREDUS GABRIEL NATHORST.

In the evening the visitors were entertained in the College Hall of St. John's, on the invitation of the Master and Fellows, Dr. Bonney being in the Chair. The Chairman proposed the health of the King, and then the Vice-Chancellor proposed the Geological Society, and Sir Archibald Geikie responded. The Chairman next proposed ‘The Visitors,’ to which toast Prof. Brögger and Prof. de

Lapparent responded. The latter replied in English, in the following words:—

‘Professor Brögger has been so able and well qualified an interpreter for your foreign guests, that I should only weaken the impression produced by his speech if I were to endeavour to find other words, in which to say how much we are indebted to our British friends for the unparalleled magnificence of their reception. There is a common belief in my country that Scotchmen are unrivalled in hospitality. For myself, I have had no occasion of testing the case; but after all that I could see during the last few days, I am bound to assert that it would be impossible to do better than Englishmen have done.

‘Now there remains to me the duty of expressing my personal gratitude for the great honour conferred on me by the Senate of your illustrious University; a favor wherein I clearly perceive how beneficial is the profession of geologist, to which belongs the privilege of establishing between its members, thanks to their frequent meetings in the field, such intimate relations as no other branch of knowledge would be able to produce. Thus the mind is inclined towards indulgence in the appreciation of individual merits, because it has to do with men who were already considered as good friends.

‘To that circumstance I am certainly indebted for a choice which indeed makes me very proud, when I think that I am thus becoming a side member of that splendid lineage, to which the names of a Bacon, a Newton, a Sedgwick, a Maxwell, and so many others, secure an incomparable lustre.

‘But to-day there is in my mind something that you perhaps can hardly realize: I mean the deep feeling which I am now experiencing, when I consider that, through the virtue of this beautiful silky covering, I might be to a certain extent entitled to claim the title of a temporary citizen, in a country where everything and everybody stands in its right place; where the greatest respect for the past allies itself with a strong love for progress; where an everlasting and well-ordered evolution never turns to revolution.

‘Such a state of things has always appeared to my conservative mind like a *terra promissa*, but rather *ignota* to anyone living on the other side of the Channel. How gratifying it is for me to state that, thanks to your choice, I am to-day entering, if not actually, at least honorarily, into possession of so valuable a property!

‘The sense of this value grew up all at once in me some

thirty-one years ago. At that time, while engaged in the preliminary studies connected with the proposed Channel-tunnel, I went to Oxford, as a mere visitor. For hours, I walked through that marvellous sequence of colleges, churches, cloisters, so harmoniously emerging from the green of trees, grass, and ivy. At first, I only felt myself carried back many centuries in the past. But when I had meditated upon that way of securing the education of a people; when I had experienced the peaceful and fascinating influence of the scenery; when my breath had been filled with the perfume of religious feeling which evolved from that beautiful vision; then a new light broke out in my soul, and I told myself, "Now I plainly understand England"! And the same would have been the result of a similar visit to Cambridge.

'In turn, I hope, you will understand me, when I say that, since that time, I have felt more and more desirous for the establishment of a permanent junction between the Continent and a country where so many good lessons were to be won, either from the people or from the stones.

'The realization of this dream I am always awaiting. But, as a valuable consolation, I have been granted to-day a personal junction, which I ask leave to consider a precious reward for the attention, always paid by me to the work of English scientists.

'This attention might be said to have its roots in my early past. In the year 1867, on the occasion of the International Exhibition in Paris, the Geological Society of France had organised a special meeting, to which I was appointed Secretary. During a visit of the guests to the collections of the Natural History Museum, the young secretary was called for by one of our best senior geologists, M. de Verneuil, a fellow-worker of Sir Roderick Murchison in the first geological exploration of Russia. I hastened to come, and found M. de Verneuil speaking English with an old and most distinguished gentleman, to whom he kindly wished to introduce me. The man was Sir Charles Lyell!

'Never could I have supposed that so great a geologist would have paid the least attention to the apprentice of 27 years. Therefore you may think how much I was surprised when, on the following day, the door of my bachelor's room was opened by Sir Charles himself: having been told that I had recently issued a paper on a matter which was of some interest to him, he had kindly come to get an author's copy.

'This day in my life remains marked with a snow-white stone!

Being already a direct disciple of Élie de Beaumont, and enjoying also the paternal goodwill of the Nestor of geologists, M. d'Omalus d'Halloy, I felt myself definitively baptized by this visit of the author of the "Principles."

'To that baptism your Senate has added to-day the sacrament of confirmation. As I could not find appropriate words for such a reward, let me remember that in Cambridge there is no fear for latinity, and therefore conclude by using the final sentence of one of our liturgical songs:—

De quibus nos humillimas
Devotas atque debitas
Deo dicamus gratias.'

Prof. Hughes proposed 'The College,' and Mr. R. F. Scott, who has since been elected Master of St. John's, replied.

On Wednesday, Prof. Hughes conducted a party to Barrington to study the Pleistocene Gravels, and some fine mammalian bones were unearthed.

On Thursday, an excursion was conducted to Cromer, to study the Forest Series and Glacial accumulations.

The President was entertained by the Vice-Chancellor of the University, and the following is a list of the official Visitors:—Prof. Adams, Dr. Ami, Mr. Beadnell, Prof. Beck, Mr. Becker, Prof. M. Boule, Mr. A. W. Brögger, Prof. Brögger, Prof. & Mrs. W. B. Clark, Prof. Conwentz, Prof. Credner, Prof. W. M. Davis, Mr. Denham, Prof. Dollo, Prof. von Drygalski, Prof. Fallet, Prof. Gottsche, Dr. van der Graecht, Dr. & Mrs. Hague, Dr. Hatch, Dr. Hume, Prof. Iddings, Dr. & Mrs. Johnston-Lavis, Prof. & Fräulein Kayser, Dr. Kolderup, Prof. de Lapparent, Mr. La Touche, Prof. Lœwinson-Lessing, Dr. Manson, M. de Margerie, Prof. & Fröken Nathorst, Mr. R. D. Oldham, Prof. Pavlow, Dr. & Mrs. Rogers, Dr. Sederholm, Prof. Tarr, Dr. & Fru Thoroddsen, Dr. Tietze, Dr. Tschernyschew, Prof. Wichmann, and Dr. Wieland. Three Vice-Presidents (Mr. Herries, Dr. Strahan, and Dr. Teall) and the two Secretaries (Prof. Garwood and Prof. Watts) were also present.

CHAPTER IX.

THE END.

AT the close of the Centenary Celebration a final meeting of the Reception Committee was called, to draw up a Report for presentation to the Council. The Council adopted this Report on November 6th, at its first meeting in the following Session. The Council expressed its thanks to all those Authorities, Institutions, and Individuals who had given most welcome assistance in preparing for and carrying out arrangements for the Celebration. Many of these Institutions and Persons have already been gratefully referred to in the course of this Record, and will not be again mentioned in this place; but there remain a few that have been reserved for final mention.

First came the Permanent Officers of the Society, Mr. L. L. Belinfante, Mr. C. H. Black, Mr. W. R. Jones, and Mr. A. Field, to whom the Society was much indebted for the zeal and energy with which they carried out the arrangements entrusted to them.

Then the thanks of the Society were accorded to the Institution of Mining and Metallurgy for the award of its Gold Medal to the President; to Mr. H. B. Woodward for 'The History of the Geological Society of London'; and to Messrs. Blackwood & Son and Messrs. Macmillan, for the loan of illustrations.

Thanks were also accorded to those Fellows and others who entertained the Society's Guests at their houses, or offered hospitality during excursions and visits; to those who kindly allowed the inspection of their quarries or works, or gave other valuable assistance during excursions; and to those (39 in number) who acted as Directors of excursions. Gratitude was also expressed to the working Committees, the Record and Centenary Committees, and the Excursion, Rooms, and Entertainments Sub-Committees.

It was resolved to write and express the thanks of the Society to each Institution which presented an Address or sent a Delegate to represent it at the Celebration.

And in conclusion it was agreed to print an extra number of copies of the History of the Society and to present them to all Institutions sending Delegates, to all Foreign Members and Correspondents, and to a number of Institutes and Persons outside the Society, to whom the Society wished to express its indebtedness.

The Centenary Date.

NOVEMBER 13TH, 1907.

On Wednesday, November 13th, the hundredth anniversary of the actual date of the foundation of the Society, a Reception of Fellows was held by the President at the Apartments of the Society. The Addresses presented to the Society at the Centenary were exhibited, together with other objects and documents connected with the Celebration.

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